Technical Report 421

DESIGN OF AN INTEGRATED DIVISION-LEVEL BATTLE SIMULATION FOR RESEARCH, DEVELOPMENT, AND TRAINING:

Volume II. Detailed Design Notes

Roland V. Tiede, Roger A. Burt, and Theodore T. Bean
Science Applications, Inc.

HUMAN FACTORS TECHNICAL AREA

and

ARI FIELD UNIT AT FORT LEAVENWORTH, KANSAS

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JOSEPH ZEIDNER
Technical Director

WILLIAM L. HAUSER
Colonel, U S Army
Commander

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18. SUPPLEMENTARY NOTES

This volume provides detailed design information. Volume I, ARI Technical Paper 420, describes design considerations and the structured framework for simulation development. Research was monitored by Dr. Edgar M. Johnson, Mr. Robert S. Andrews, and Dr. Thomas M. Granda of ARI.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Division level battle simulation	Interactive simulation
Decision variables	Battle outcome generator
Event-store simulation	Division staff
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Event threads	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Requirement: (1) Develop a top-down design for an integrated family of modular division-level battle simulations which separately or jointly will exercise players performing critical functions in command and control (Vol. I). (2) Develop detailed design specifications for the Intelligence Staff module of the integrated battle simulation (Volume II).

The design approach involved the following principles: selection of the decision variables to be manipulated by the division staff modules (Continued)

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and the event threads both within and external to the staff modules thereby fixing the event sequence and time of occurrence; and incorporating into the simulation every event thread needed to support the input/output relationship. The dynamic realism needed to place decision makers in a realistic environment is achieved by means of an event store technique. The five classes of events of which the event threads are composed are defined and the logical flow of the event store simulation is illustrated. A sixth class of event needed for operation in an ADP-assisted mode is also defined. The approach begins at the heart of the information system, the decisions, and then develops the simulation needed to implement them--the inverse of the usual approach.

The design concept provides for a man in the loop in that any one or any combination of five basic staff modules (Cmd Grp, G-2, G-3, G-1/G-4, FSCE) plus one enemy module (Cmd Grp) may be either occupied by human players or simulated. The module simulations are designed as "plug-in" modules any one or more of which can be replaced by players. The simulation also contains a battle outcome generator which simulates all other events within the division and the enemy force opposing it, and which feeds back to the players in slow, real, or fast time (at the option of the user) the results of their decisions. The design also provides for interfaces with higher and adjacent units. It includes the following features:

1. The modules are based on the traditional G-staff structure.

2. Nuclear battle events are included.

3. Live modules may be required to perform simultaneous planning and execution; the results of such planning may be evaluated by subsequent execution of plans.

4. Other staff elements not included in the basic five modules (e.g., engineer, signal) are "hardwired" components of the simulation.

5. The basic design provides for manual operation by live players but it is readily expandable to permit player operation in an ADP-assisted mode.

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Roland V. Tiede, Roger A. Burt, and Theodore T. Bean
Science Applications, Inc.

Submitted by:
Edgar M. Johnson, Chief
HUMAN FACTORS TECHNICAL AREA

and

Robert S. Andrews, Chief
ARI FIELD UNIT AT FORT LEAVENWORTH, KANSAS

Approved by:

Milton S. Katz, Acting Director
ORGANIZATIONS AND SYSTEMS
RESEARCH LABORATORY

U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES
5001 Eisenhower Avenue, Alexandria, Virginia 22333

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Staff Operations and
Procedures

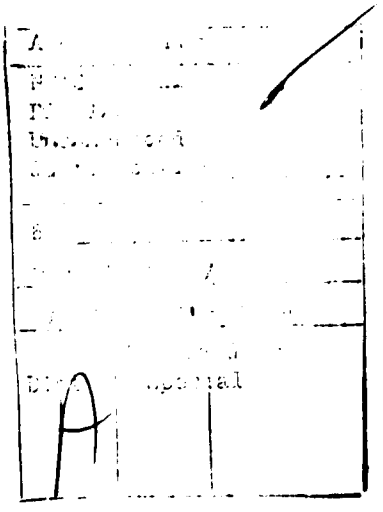
ARI Research Reports and Technical Reports are intended for sponsors of R&D tasks and for other research and military agencies. Any findings ready for implementation at the time of publication are presented in the last part of the Brief. Upon completion of a major phase of the task, formal recommendations for official action normally are conveyed to appropriate military agencies by briefing or Disposition Form.

FOREWORD

The Army Research Institite for the Behavioral and Social Sciences (ARI) conducts research on tactical information systems with particular emphasis on the human factor in battlefield command/control and intelligence functions and operations. The development and refinement of man-in-the-loop simulations to serve as research test-beds is a necessary step in the development of command staff aids and procedures to meet the challenge of the modern battlefield. The ARI research program in this domain is independently and jointly executed by the Human Factors Technical Area in Alexandria, Va., and the ARI Field Unit at Fort Leavenworth, Kans.

The present report describes the detailed design specifications for a man-in-the-loop simulation for research, development, and training. The basic concept developed is one of a modular simulation where one or more elements within the command staff group may be exercised, with controllers supervising play and feeding in data, etc., from unpopulated (simulated) staff elements. Pre-established event threads provide a means for realistic play of a complex scenario with a relatively small controller team. The possible role of computer support to the controllers is also discussed. The structured framework of the simulation and the considerations that entered into its design are provided in ARI Technical Report 420. This effort provides part of the methodological and technological base required for development and evaluation of command group aids and procedures.

Research on staff operations and procedures is both conducted in-house and augmented contractually with organizations selected for their specialized capabilities and unique facilities. Efforts in this area are responsive to general requirements of Army Projects 2Q162722A765 and 2Q163743A774 and to special requirements of the U.S. Army Combined Arms Combat Development Activity, Fort Leavenworth, Kans., and the U.S. Army Intelligence Center and School, Fort Huachuca, Ariz. This effort is also responsive to Human Resource Need 78-85 "War Gaming of Intelligence." It was conducted under Contract DAHC19-77-C-0047 by Science Applications, Inc., monitored by both the Human Factors Technical Area and the Fort Leavenworth Field Unit of ARI.



JOSEPH ZEIDNER
Technical Director

DESIGN OF AN INTEGRATED DIVISION-LEVEL BATTLE SIMULATION
FOR RESEARCH, DEVELOPMENT, AND TRAINING

BRIEF

This volume provides detailed design information with respect to the simulation. It should be read in the context of the structural framework and the design considerations presented in the companion volume, DESIGN OF AN INTEGRATED DIVISION-LEVEL BATTLE SIMULATION FOR RESEARCH, DEVELOPMENT, AND TRAINING.

Requirement:

1. Develop a top-down design for an integrated family of modular division-level battle simulations which separately or jointly will exercise players performing critical functions in command and control.

2. Develop detailed design specifications for the Intelligence Staff module of the integrated battle simulation.

Approach:

The design approach involved the following principles: selection of the decision variables to be manipulated by the division staff modules and the associated inputs and outputs; tying together the inputs and outputs by means of event threads both within and external to the staff modules thereby fixing the event sequence and time of occurrence; and incorporating into the simulation every event thread needed to support the input/output relationship. The dynamic realism needed to place decision makers in a realistic environment is achieved by means of an event store technique. The five classes of events of which the event threads are composed are defined and the logical flow of the event store simulation is illustrated. A sixth class of event needed for operation in an ADP-assisted mode is also defined. The approach begins at the heart of the information system, the decisions, and then develops the simulation needed to implement them--the inverse of the usual approach.

The design concept provides for a man in the loop in that any one or any combination of five basic staff modules (Cmd Grp, G-2, G-3, G-1/G-4, FSCE) plus one enemy module (Cmd Grp) may be either occupied by human players or simulated. The module simulations are designed as "plug-in" modules any one or more of which can be replaced by players. The simulation also contains a battle outcome generator which simulates all other events within the division and the enemy force opposing it, and which feeds back to the players in slow, real, or fast time (at the option of the user) the

results of their decisions. The design also provides for the interfaces with higher and adjacent units. It includes the following features:

1. The modules are based on the traditional G-staff structure.

2. Nuclear battle events are included.

3. Live modules may be required to perform simultaneous planning and execution; the results of such planning may be evaluated by subsequent execution of plans.

4. Other staff elements not included in the basic five modules (e.g., engineer, signal) are "hardwired" components of the simulation.

5. The basic design provides for manual operation by live players but it is readily expandable to permit player operation in an ADP-assisted mode.

Conclusions:

The general top-down design of the simulation has been developed as has the more detailed design of the Intelligence Staff module. However, two basic design problems were uncovered in the course of the research.

1. A fundamental problem is inherent in the modular nature of the simulation. If a populated module performs below standard (makes errors, omits or takes illogical actions) how can simulated command and control processes reflect the degraded force effectiveness that results? Although much simpler to implement, standard performance by simulated command control nodes independent of performance of populated modules would not meet simulation objectives.

2. In the interest of economy of operation and player motivation it would be desirable to eliminate or reduce the requirement for repetitive, low-skill tasks, e.g., answering radios and telephones, and transmitting messages, routine filing, etc., which have little impact on the quality of decision making and are of little interest to the investigator. It may also be desirable to modify or recombine tasks in investigations of alternative procedures. This can be difficult to accommodate and still retain a credible, realistic decision-making environment.

It is conluded that both the above problems are serious enough to warrant additional analysis before implementing the simulation.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF FIGURES

DESIGN NOTE A

LIST OF INDIVIDUAL TACTICAL INFORMATION MESSAGES

A.1 EXPLANATION OF TABLES

Figures A-1 through A-5 contain the list of individual tactical information messages output by or input to the command or staff module, as appropriate. The outputs by each module are listed in the clear upper portion of each table. The inputs to each module are listed in the shaded lower portion of each table.

- The number associated with each tactical information message is the basic reference number which identifies each message regardless of the class of the interface event it is used in.
- "(XX)" appears as the reference number for certain tactical information messages. This indicates the set of input messages that may be forwarded by a particular module. The messages that may be forwarded are indicated by an "R".
- The "D" after the reference number indicates that the associated tactical information message is not assimilable by the computer simulation, and will, accordingly, only be utilized by populated modules as specified in Design Notes E, F, and G.
- An asterisk after the reference number specifies those messages available for use by the Blue and Red Command Modules.
- The specific format for each of these tactical information messages is contained in Design Note D.

Table A-1. Command Group Module.

REF NO		TACTICAL INFORMATION MESSAGE
		COMMAND GROUP MODULE
01	*	QUERY BY COMMAND GROUP
02	*	NUCLEAR RELEASE REQUEST
03 D		MISSION ANALYSIS
04 D		COMMANDER'S GUIDANCE
05	*	COMMANDER'S DECISION INITIATED BY COMMANDER RESPONSE TO STAFF REQUEST
(See all messages marked with an asterisk in Tables A-2 through A-5. Inputs to the Blue command modules are automatically retransmitted by the cognizant staff module.)		

Table A-2. Fire Support Element Module.

REF NO			TACTICAL INFORMATION MESSAGE	
			FIRE SUPPORT ELEMENT MODULE	
10			QUERY BY FIRE SUPPORT ELEMENT	
11	D		QUERY ON CORPS FRAG ORDER (FIRE SUPPORT)	
12			FRAG ORDER (FIRE SUPPORT) CHANGE TO FIRE SUPPORT ANNEX FIRE MISSION	
13		*	DIVISION IMMEDIATE REQUEST FOR FIRE SUPPORT	
14			DIVISION PREPLANNED REQUEST FOR FIRE SUPPORT	
15		* R	ARTILLERY SITUATION REPORT	(ALSO INPUT)
16		R	TARGET LIST (ARTILLERY)	(ALSO INPUT)
17		* R	FRIENDLY UNIT FIRE SUPPORT CAPABILITY	(ALSO INPUT)
18		* R	ENEMY UNIT FIRE SUPPORT CAPABILITY	(ALSO INPUT)
19			POST STRIKE ANALYSIS	
20	D		FIRE SUPPORT ANNEX	
21			REQUEST BY FIRE SUPPORT ELEMENT FOR RELEASE FOR CONCURRENCE	
22			RESPONSE TO REQUEST RELEASE/HOLD CONCURRENCE/NON-CONCURRENCE	
(XX)			(Retransmittal of a Received Message)	
23		* R	IMMEDIATE REQUEST FOR FIRE SUPPORT ARTILLERY CLOSE AIR SUPPORT NAVAL GUN FIRE	
24		R	PREPLANNED REQUEST FOR FIRE SUPPORT ARTILLERY CLOSE AIR SUPPORT NAVAL GUN FIRE	
25		* R	TARGET (INTELLIGENCE)	
26		* R	FIRE SUPPORT ELEMENT SUPPORT STATUS AIR DEFENSE ARTILLERY TACTICAL AIR SORTIES NUCLEAR, BIOLOGICAL, CHEMICAL	
27			QUERY ON FRAG ORDER (FIRE SUPPORT)	
28	D		FIRE SUPPORT SPECIAL ESTIMATE/ANNEX AIR DEFENSE ARTILLERY TACTICAL AIR SORTIES NUCLEAR, BIOLOGICAL, CHEMICAL	
29	D	*	CORPS FRAG ORDER (FIRE SUPPORT) CHANGE TO FIRE SUPPORT ANNEX FIRE MISSION	

Table A-3. Intelligence Staff Module.

REF NO			TACTICAL INFORMATION MESSAGE	
			INTELLIGENCE STAFF MODULE	
30			QUERY BY INTELLIGENCE STAFF	
31	D		QUERY ON CORPS FRAG ORDER (INTELLIGENCE)	
32			FRAG ORDER (INTELLIGENCE)	
33	D		DIVISION INTELLIGENCE SUMMARY	
34		*	NUCLEAR, BIOLOGICAL, CHEMICAL REPORT	(ALSO INPUT)
35		* R	WEATHER FORECAST	(ALSO INPUT)
36			INTELLIGENCE PARAGRAPH OF DIVISION SITUATION REPORT	
37	D		INTELLIGENCE ESTIMATE	
38	D		INTELLIGENCE ANNEX	
39			REQUEST BY INTELLIGENCE STAFF FOR RELEASE FOR CONCURRENCE	
40			RESPONSE TO REQUEST RELEASE/HOLD CONCURRENCE/NON-CONCURRENCE	
(XX)			(Retransmittal of a Received Message)	
41		R	BRIGADE INTELLIGENCE SUMMARY	
42		R	SHELL REPORT	
43		R	SPOT REPORT	
44		* R	COMBAT INTELLIGENCE REPORT	
45		R	POST STRIKE DAMAGE REPORT CONVENTIONAL NUCLEAR	
46		* R	ESTIMATE OF ENEMY STRENGTH/DISPOSITION	
47		R	AGGREGATED TARGET LIST (INTELLIGENCE)	
48			QUERY ON FRAG ORDER (INTELLIGENCE)	
49	D		CORPS FRAG ORDER (INTELLIGENCE)	

Table A-4. Operations Staff Module.

REF NO		TACTICAL INFORMATION MESSAGE	
		OPERATIONS STAFF MODULE	
50		QUERY BY OPERATIONS STAFF	
51 D		QUERY ON CORPS FRAG ORDER (OPERATIONS)	
52		FRAG ORDER (OPERATIONS) OPERATIONS ELECTRONIC WARFARE	
53 D		DIVISION SITUATION REPORT	
54		NUCLEAR WARNING ORDER	
55		AIR DEFENSE WARNING	
56	*	REQUEST FOR RESERVES	
57 D		OPERATIONS PLAN	
58 D		OPERATIONS ESTIMATE	
59	* R	INITIAL ENEMY CONTACT	(ALSO INPUT)
60	* R	UNIT PR[illegible]SS REPORT IN[illegible]T [illegible]TACT	(ALSO INPUT)
61		[illegible] WITH FRIENDLY UNIT	(ALSO INPUT)
62	* R	[illegible] ELECTRONIC ORDER OF BATTLE	(ALSO INPUT)
63		REQUEST BY OPERATIONS STAFF FOR RELEASE FOR CONCURRENCE	
64		RESPONSE TO REQUEST RELEASE/HOLD CONCURRENCE/NON-CONCURRENCE	
(XX)		(Retransmittal of a Received Message)	
65	* R	BRIGADE/BATTALION SITUATION REPORT	
66		AIR DEFENSE ALERT	
67	* R	ORGANIC AVIATION SORTIE STATUS	
68		QUERY ON FRAG ORDER (OPERATIONS) OPERATIONS ELECTRONIC WARFARE	
69		QUERY ON NUCLEAR WARNING ORDER	
70		QUERY ON AIR DEFENSE WARNING	
71 D		CORPS FRAG ORDER (OPERATIONS)	
72 D		OPERATIONS SPECIAL ESTIMATE/ANNEX AVIATION COMMUNICATIONS ENGINEERS	

Table A-5. Combat Service Support Staff Module.

REF NO			TACTICAL INFORMATION MESSAGE	
			COMBAT SERVICE SUPPORT STAFF MODULE	
80			QUERY BY COMBAT SERVICE SUPPORT ELEMENT	
81	D		QUERY ON CORPS FRAG ORDER (COMBAT SERVICE SUPPORT)	
82			FRAG ORDER (COMBAT SERVICE SUPPORT) CHANGE TO COMBAT SERVICE SUPPORT ANNEX MEDICAL EVACUATION RESUPPLY TROOP LIFT	
83	D		DIVISION PERSONNEL DAILY SUMMARY	
84	D		PERIODIC LOGISTIC REPORT	
85	D	*	PERSONNEL REQUISITION	
86	D	R	IMMEDIATE REQUEST FOR LOGISTICAL SUPPORT	(ALSO INPUT)
87	D		COMBAT SERVICE SUPPORT ESTIMATE	
88	D		COMBAT SERVICE SUPPORT ANNEX	
89			REQUEST BY COMBAT SERVICE SUPPORT STAFF FOR RELEASE FOR CONCURRENCE	
90			RESPONSE TO REQUEST RELEASE/HOLD CONCURRENCE/NON-CONCURRENCE	
(XX)			(Retransmittal of a Received Message)	
91		* R	BRIGADE/BATTALION PERSONNEL DAILY SUMMARY	
92		* R	CAPE REPORT CASUALTIES AMMUNITION PETROL, OIL, LUBRICATION EQUIPMENT	
93		R	PREPLANNED REQUEST FOR LOGISTICAL SUPPORT RESUPPLY TROOP LIFT	
94			QUERY ON FRAG ORDER (COMBAT SERVICE SUPPORT)	
95	D		CORPS FRAG ORDER (COMBAT SERVICE SUPPORT)	
96	D	R	DIVISION SUPPORT COMMAND SITUATION REPORT	
97	D		CIVILIAN/MILITARY OPERATIONS ESTIMATE/ANNEX	

DESIGN NOTE B

MODULE OUTPUTS AND THEIR MODULAR ADDRESSES

B.1 EXPLANATION OF TABLES

Table B-1 lists the outputs of the Command Group, each principal staff module, corps and adjacent divisions, special staff and organic units subordinate to the division headquarters and indicates where the tactical information messages may be addressed. In the event a particular command or staff module is simulated, these addresses are "hard-wired". For a populated module the addressee will be as determined by the players. The outputs from corps adjacent divisions, and for the tactical documents required by populated modules from simulated modules or the special staff will be distributed by the controller in accordance with the "play" of the event-store simulation.

Table B-1. Module Outputs and their Modular Addresses.

TACTICAL INFORMATION MESSAGE	CORPS	ADJ DIV	CMD	FSE	G2	G3	G1/G4	DIV
COMMAND GROUP								
01 QUERY				X	X	X	X	X
02 NUC REL REQ	X					X		
03D MSN ANAL				X	X	X	X	
04D CMDR'S GUID				X	X	X	X	
05 CMDR'S DEC				X	X	X	X	
XX RETRANSMIT				X	X	X	X	
FIRE SUPPORT ELEMENT								
10 QUERY					X	X	X	X
11D QUERY	X							
12 FRAG ORDER (FS)	X	X	X		X	X	X	X
13 DIR FIRE SPT	X	X				X		
14 DPR FIRE SPT	X					X		
15 ARTY SITREP						X	X	
16 TGT LIST (ARTY)					X	X		
17 FU FIRE SPT CAP			X			X		
18 EU FIRE SPT CAP					X	X		
19 POST STRIKE ANAL			X		X	X		
20D FIRE SPT ANNEX						X		
21 REQUEST			X		X	X	X	
22 RESPONSE					X	X	X	
XX RETRANSMIT			X		X	X	X	
INTELLIGENCE STAFF								
30 QUERY				X		X	X	X
31D QUERY	X							
32 FRAG ORDER(I)	X	X	X	X		X	X	X
33D DIV INTSUM	X		X	X		X	X	
34 NBC REPORT	X	X	X	X		X	X	
35 WX FORECAST			X	X		X	X	
36 INTELL INPUT TO DIV SITREP						X		
37D INTELL EST			X	X		X	X	
38D INTELL ANNEX						X		
39 REQUEST			X	X		X	X	
40 RESPONSE				X		X	X	
XX RETRANSMIT			X	X		X	X	
OPERATIONS STAFF								
50 QUERY				X	X		X	X
51D QUERY	X							
52 FRAG ORDER (OPS)	X	X	X	X	X		X	X
53D DIV SITREP	X		X	X	X		X	
54 NUC WARNING ORDER	X	X	X	X	X		X	X
55 AD WARNING	X	X	X	X	X		X	X
56 REQ FOR RESERVES	X							
57D OP PLAN	X		X	X	X		X	
58D OP EST			X	X	X		X	
59 INITIAL EN CONT			X		X			
60 UNIT PROG RPT			X					
61 LOSS CONT W/FU			X	X				
62 EDOB				X	X			
63 REQUEST			X	X	X		X	
64 RESPONSE								
XX RETRANSMIT			X	X	X		X	

Table B-1. Module Outputs and their Modular Addresses. (Continued)

TACTICAL INFORMATION MESSAGE	CORPS	ADJ DIV	CMD	FSE	G2	G3	G1/G4	DIV
COMBAT SERVICE SPT STAFF								
80 QUERY				X	X	X		X
81D QUERY	X							
82 FRAG ORDER (CSS)	X	X	X	X	X	X		X
83D DIV PDS	X		X					
84D PER LOG RPT	X		X					
85D PERS REQ	X		X			X		
86D IR LOG SPT	X							
87D CSS EST			X	X	X	X		
88D CSS ANNEX						X		
89 REQUEST			X	X	X	X		
90 RESPONSE				X	X	X		
XX RETRANSMIT			X	X	X	X		
CORPS								
D GENERAL SIT			X	X	X	X	X	
D SPECIAL SIT			X	X	X	X	X	
29D FRAG ORDER (FS)				X				
34 NBC REPORT					X			
44 CBT INTELL RPT					X			
49D FRAG ORDER (I)					X			
71D FRAG ORDER (OPS)						X		
95D FRAG ORDER (CSS)							X	
ADJACENT DIVISION								
23 IR FIRE SPT				X				
SPECIAL STAFF								
26 FSE SPT STATUS				X				
28D FS EST/ANNEX				X				
67 AVN SORTIE STATUS						X		
72D OPS EST/ANNEX						X		
96D DISCOM SITREP							X	
97D CMO EST/ANNEX							X	
DIVISION								
15 ARTY SITREP				X				
16 TGT LIST (ARTY)				X				
17 FU FIRE SPT CAP				X				
18 EU FIRE SPT CAP				X				
23 IR FIRE SPT				X				
24 PR FIRE SPT				X				
25 TGT (I)				X				
27 QUERY (FS)				X				
34 NBC REPORT					X			
35 WX FORECAST					X			
41 BDE INTSUM					X			
42 SHELL REPORT					X			
43 SPOT REPORT					X			
44 CBT INTELL RPT					X			
45 POST STRIKE DAM RPT					X			
46 EST OF EN STRENGTH					X			
47 TGT LIST (I)					X			
48 QUERY (I)					X			
59 INITIAL EN CONT						X		
60 UNIT PROG RPT						X		
61 LOSS CONT W/FU						X		
62 ECOB						X		
65 BDE/BN SITREP						X		
66 AD ALERT						X		
68 QUERY (OPS)						X		
69 QUERY (NBC)						X		
70 QUERY (ADW)						X		
86 IR LOG SPT							X	
91 BDE/BN PDS							X	
92 CAPE REPORT							X	
93 PR LOS SPT							X	
94 QUERY (CSS)							X	

DESIGN NOTE C

INPUT/OUTPUT MATRICES

C.1 EXPLANATION OF TABLES

Tables C-1 through C-5 define the relationship between inputs, from all sources, to each module and the associated outputs. The input messages and their sources are listed in the left hand column of each table and outputs are presented along the top. The unique reference number defined in Design Note A is also restated for each input/output message.

An "X" at the intersection of a row (input) and a column (output) indicates that information contained within the input message may be used in the production of the output message. Accordingly, it is recognized that these relationships between the input/output messages define a portion of the Class 1 events for simulated staff modules. Appropriate algorithms will be defined for producing outputs from the inputs. Obviously, players within populated modules will determine their own internal procedures required to produce outputs from the given inputs.

The RETRANSMIT output within each matrix indicates those inputs which are subject to retransmission by the receiving module. These messages correspond to those presented in subsection 4.1.2.

Table C-1. Input/Output Matrix for Command Group Module.

INPUT MESSAGES		SOURCE	OUTPUT MESSAGES: 01 QUERY	02 NUC REL REQ	03D MSN ANAL	04D CMDR'S GUID	05 CMDER'S DEC	XX RETRANSMIT	
12	FRAG ORDER (FS)	FSE				X			
17	FU FIRE SPT CAP	FSE	X	X			X		
19	POST STRIKE ANAL	FSE					X		
21	REQUEST	FSE					X		
XX	RETRANSMIT	FSE					X		
32	FRAG ORDER (I)	G2				X			
33D	DIV INTSUM	G2				X			
34	NBC REPORT	G2		X			X		
35	WX FORECAST	G2	X		X	X	X		
37D	INTELL EST	G2				X	X		
39	REQUEST	G2					X		
XX	RETRANSMIT	G2					X		
52	FRAG ORDER (OPS)	G3				X			
53D	DIV SITREP	G3		X	X		X		
54	NUC WARNING ORDER	G3				X			
55	AD WARNING	G3					X		
57D	OP PLAN	G3							
58D	OP EST	G3				X			
59	INITIAL EN CONTACT	G3					X		
60	UNIT PROG RPT	G3	X	X			X		
61	LOSS CONT W/FU	G3				X	X		
63	REQUEST	G3		X			X		
XX	RETRANSMIT	G3					X		
82	FRAG ORDER (CSS)	G1/G4				X			
83D	DIV PDS	G1/G4	X						
84D	PER LOG RPT	G1/G4	X						
85D	PERS REQ	G1/G4	X						
87D	CSS EST	G1/G4				X			
89	REQUEST	G1/G4					X		
XX	RETRANSMIT	G1/G4					X		
D	GENERAL SIT	CORPS			X	X			
D	SPECIAL SIT	CORPS			X	X			

Table C-2. Input/Output Matrix for Fire Support Element Module.

INPUT MESSAGES		SOURCE	OUTPUT MESSAGES: 10 AND 11D QUERY	12 FRAG ORDER (FS)	13 DIR FIRE SPT	14 DPR FIRE SPT	15 ARTY SITREP	16 TGT LIST (ARTY)	17 FU FIRE SPT CAP	18 EU FIRE SPT CAP	19 POST STRIKE ANAL	20D FIRE SPT ANNEX	21 REQUEST	22 RESPONSE	XX RETRANSMIT
G1	QUERY	CMD		X	X	X	X	X	X	X					X
03D	MSN ANAL	CMD		X	X	X					X				
04D	CMDR'S GUID	CMD		X							X				
05	CMDR'S DEC	CMD		X											
XX	RETRANSMIT	CMD		X											
30	QUERY	G2			X	X	X	X	X	X	X				X
32	FRAG ORDER (I)	G2		X	X	X						X			
33D	DIV INTSUM	G2													
34	NBC REPORT	G2		X			X	X	X						
35	WX FORECAST	G2		X	X	X		X	X						
37D	INTELL EST	G2				X			X		X				
39	REQUEST	G2		X									X		
40	RESPONSE	G2		X											
XX	RETRANSMIT	G2		X	X	X		X	X	X	X				
50	QUERY	G3			X	X	X	X	X	X	X				X
52	FRAG ORDER (OPS)	G3		X	X	X						X			
53D	DIV SITREP	G3						X	X						
54	NUC WARNING ORDER	G3		X			X	X		X					
55	AD WARNING	G3						X							
57D	OP PLAN	G3		X											
58D	OP EST	G3						X			X				
61	LOSS CONT W/FU	G3		X			X								
62	EOOB	G3		X			X		X			X			
63	REQUEST	G3		X									X		
64	RESPONSE	G3		X											
XX	RETRANSMIT	G3		X	X		X	X				X			
80	QUERY	G1/G4			X	X	X	X	X	X	X				X
82	FRAG ORDER (CSS)	G1/G4						X				X			
87D	CSS EST	G1/G4		X							X				
89	REQUEST	G1/G4		X									X		
90	RESPONSE	G1/G4		X											
XX	RETRANSMIT	G1/G4				X	X		X			X			
D	GENERAL SIT	CORPS							X			X			
D	SPECIAL SIT	CORPS							X			X			
29D	FRAG ORDER (FS)	CORPS	X	X											
23	IR FIRE SPT	ADJDIV		X			X								X
26	FSE SPT STATUS	SS		X	X	X	X								X
28D	FSE EST/ANNEX	SS									X				
15	ARTY SITREP	DIV	X				X					X			X
16	TGT LIST (ARTY)	DIV	X	X		X									X
17	FU FIRE SPT CAP	DIV	X	X				X			X				X
18	EU FIRE SPT CAP	DIV	X						X						X
23	IR FIRE SPT	DIV		X	X										X
24	PR FIRE SPT	DIV	X			X									X
25	TGT (I)	DIV	X	X			X								X
27	QUERY (FS)	DIV		X											

Table C-3. Input/Output Matrix for Intelligence Staff Module.

INPUT MESSAGES		SOURCE	OUTPUT MESSAGES: 30 and 31D QUERY	32 FRAG ORDER (FS)	33D DIV INTSUM	34 NBC REPORT	35 WX FORECAST	36 INTELL INPUT TO DIVSITREP	37D INTELL EST	38D INTELL ANNEX	39 REQUEST	40 RESPONSE	XX RETRANSMIT
01	QUERY	CMD		X	X	X							X
03D	MSN ANAL	CMD	X					X	X				
04D	CMDR'S GUID	CMD	X						X				
05	CMDR'S DEC	CMD	X										
XX	RETRANSMIT	CMD	X										
10	QUERY	FSE		X	X	X							X
12	FRAG ORDER (FS)	FSE	X	X			X			X			
16	TGT LIST (ARTY)	FSE	X	X			X			X			
17	EU FIRE SPT CAP	FSE	X				X	X					
19	POST STRIKE ANAL	FSE	X	X			X						
21	REQUEST	FSE	X								X		
22	RESPONSE	FSE	X										
XX	RETRANSMIT	FSE	X	X			X						
50	QUERY	G3		X	X	X							X
52	FRAG ORDER (OPS)	G3	X	X			X			X			
53D	DIV SITREP	G3	X	X									
54	NUC WARNING ORDER	G3	X	X			X	X					
55	AD WARNING	G3		X			X	X					
57D	OP PLAN	G3	X										
58D	OP EST	G3						X	X				
59	INITIAL EN CONT	G3		X									
62	EOGB	G3	X	X			X						
63	REQUEST	G3	X								X		
64	RESPONSE	G3	X										
XX	RETRANSMIT	G3											
30	QUERY	G1/G4											X
32	FRAG ORDER (CSS)	G1/G4	X	X			X			X			
87D	CSS EST	G1/G4						X					
89	REQUEST	G1/G4	X								X		
90	RESPONSE	G1/G4	X										
XX	RETRANSMIT	G1/G4	X										
D	GENERAL SIT	CORPS						X					
D	SPECIAL SIT	CORPS						X	X				
34	NBC REPORT	CORPS	X		X								
44	CBT INTELL RPT	CORPS	X	X									X
49D	FRAG ORDER (I)	CORPS	X										
34	NBC REPORT	DIV			X								
35	WX FORECAST	DIV	X	X			X						X
41	BDE INTSUM	DIV	X		X								X
42	SHELL REPORT	DIV		X	X			X					X
43	SPOT REPORT	DIV		X	X			X					X
44	CBT INTELL RPT	DIV		X	X			X					X
45	POST STRIKE DAM RPT	DIV		X	X			X					X
46	EST OF EN STRENGTH	DIV	X	X	X			X					X
47	TGT LIST (I)	DIV	X	X	X			X					X
48	QUERY (I)	DIV		X									

Table C-4. Input/Output Matrix for Operations Staff Module.

INPUT MESSAGES		SOURCE	OUTPUT MESSAGES: 50 and 51D QUERY	52 FRAG ORDER (OPS)	53D DIV SITREP	54 NUC WARNING ORDER	55 AD WARNING	56 REQ FOR RESERVES	57D OP PLAN	58D OP ESTIMATE	59 INITIAL EN CONT	60 UNIT PROGRESS RPT	61 LOSS CONT W/FU	62 EOOB	63 REQUEST	64 RESPONSE	XX RETRANSMIT
01	QUERY	CMD		X							X						X
02	NUC REL REQ	CMD			X												
03D	MSN ANAL	CMD						X	X								
04D	CMDR'S GUID	CMD						X	X								
05	CMDR'S DEC	CMD	X														
XX	RETRANSMIT	CMD	X														
10	QUERY	FSE		X							X						X
12	FRAG ORDER (FS)	FSE	X	X	X										X		
13	DIR FIRE SPT	FSE	X						X								
14	DPR FIRE SPT	FSE	X					X	X								
15	ARTY SITREP	FSE		X													
16	TGT LIST (ARTY)	FSE	X					X									
17	FU FIRE SPT CAP	FSE						X	X								
18	EU FIRE SPT CAP	FSE						X	X								
19	POST STRIKE ANAL	FSE		X													
20D	FIRE SPT ANNEX	FSE						X									
21	REQUEST	FSE	X												X		
22	RESPONSE	FSE	X														
XX	RETRANSMIT	FSE	X														
30	QUERY	G2		X							X			X			X
32	FRAG ORDER (I)	G2					X										
33D	DIV INTSUM	G2	X	X													
34	NBC REPORT	G2	X	X			X				X						
35	WX FORECAST	G2	X		X	X		X	X								
36	INPUT TO DIV SIT REP	G2		X													
37D	INTELL EST	G2						X	X								
38D	INTELL ANNEX	G2						X									
39	REQUEST	G2	X												X		
40	RESPONSE	G2	X														
XX	RETRANSMIT	G2	X														
80	QUERY	G1/G4		X							X						X
82	FRAG ORDER (CSS)	G1/G4					X				X			X			
87D	CSS EST	G1/G4						X	X								
88D	CSS ANNEX	G1/G4						X									
89	REQUEST	G1/G4	X												X		
90	RESPONSE	G1/G4	X														
XX	RETRANSMIT	G1/G4	X														
D	GENERAL SIT	CORPS						X	X								
D	SPECIAL SIT	CORPS						X	X								
71D	FRAG ORDER (OPS)	CORPS	X														
67	AVN SORTIE STATUS	SS	X	X							X						X
72D	OPS EST/ANNEX	SS						X	X								
59	INITIAL EN CONT	DIV								X							X
60	UNIT PROG RPT	DIV	X								X						X
61	LOSS CONT W/FU	DIV										X					X
62	EOOB	DIV	X	X									X				X
65	BDE/BN SITREP	DIV	X		X						X						X
66	AD ALERT	DIV		X													
68	QUERY (OPS)	DIV		X													
69	QUERY (NWO)	DIV				X											
70	QUERY (ADW)	DIV				X											

Table C-5. Input/Output Matrix for Combat Service Support Staff Module.

INPUT MESSAGES		SOURCE	OUTPUT MESSAGES: 80 and 81D QUERY	82 FRAG ORDER (CSS)	83D DIV PDS	84D PER LOG RPT	85D PERS REQ	86D IR LOG RPT	87D CSS EST	88D CSS ANNEX	89 REQUEST	90 RESPONSE	XX RETRANSMIT
01	QUERY	CMD			X	X	X						X
03D	MSN ANAL	CMD						X	X				
04D	CMDR'S GUID	CMD						X	X				
05	CMDR'S DEC	CMD		X									
XX	RETRANSMIT	CMD		X									
10	QUERY	FSE			X	X	X						X
12	FRAG ORDER (FS)	FSE		X									
15	ARTY SITREP	FSE		X		X							
21	REQUEST	FSE		X							X		
22	RESPONSE	FSE		X									
XX	RETRANSMIT	FSE		X									
30	QUERY	G2			X	X	X						X
32	FRAG ORDER (I)	G2		X						X			
33D	DIV INTSUM	G2								X			
34	NBC REPORT	G2		X	X		X						
35	WX FORECAST	G2		X									
37D	INTELL EST	G2						X	X				
39	REQUEST	G2		X							X		
40	RESPONSE	G2		X									
XX	RETRANSMIT	G2		X									
50	QUERY	G3			X	X	X						X
52	FRAG ORDER (CPS)	G3		X									
53D	DIV SITREP	G3		X			X						
54	NUC WARNING ORDER	G3		X									
55	AD WARNING	G3		X									
57D	OP PLAN	G3		X									
58D	OP EST	G3						X	X				
63	REQUEST	G3		X							X		
64	RESPONSE	G3		X									
XX	RETRANSMIT	G3		X									
D	GENERAL SIT	CORPS						X	X				
D	SPECIAL SIT	CORPS						X	X				
95D	FRAG ORDER (CSS)	CORPS		X									
96D	DISCOM SITREP	SS				X							X
97D	CMO EST/ANNEX	SS						X	X				
86	IR LOG SPT	DIV				X							X
91	BDE/BN PDS	DIV	X		X		X						X
92	CAPE REPORT	DIV	X										X
93	PR LOG SPT	DIV	X			X							X
94	QUERY (CSS)	DIV		X									

DESIGN NOTE D

FORMATS OF INDIVIDUAL TACTICAL INFORMATION MESSAGES

This design note contains the formats for all the tactical information messages contained in Design Note A. The formats are listed in order by the embedded reference number given in that design note. In some instances explanatory information about the use of the format is given. The standard heading for all message formats is given on page D-2 and only the body of the formats is given on the following pages.

STANDARD HEADING FOR ALL MESSAGES*

PRECEDENCE**/DTG

SECURITY CLASSIFICATION

FROM

TO

INFO

TYPE REPORT

---

*This is the standard heading for all exchange messages.

**Precedence establishes routing and handling procedures with simulated modules. Allowable procedures are:

F - FLASH

I - IMMEDIATE

P - PRIORITY

R - ROUTINE

xx RETRANSMIT MESSAGE*

1. Additional Addresses
   (Inserted at the beginning of the original message)

*Any module may retransmit any received message deemed appropriate to any other module not included on the initial distribution. Criteria for retransmission within a simulated module will be based upon time sensitivity or importance of the information.

01 QUERY BY COMMAND GROUP*

1. Message Required __.
2. DTG of Need
3. Required of all units (Yes __ No __; if no complete 4).
4. Specific battalions
   a.
   b.
   c.
   d.
   e.

*The following list indicates the allowable queries for the Command Group. They may be either Class 2 or Class 3 queries. Responses to Class 3 from the BOG will contain more current information but will be limited in the number of units presented. Responses to Class 2 events for the cognizant staff will contain information concerning more units but the information will not be as current.

15. Arty SITREP
16. Tgt List (Arty)
17. FU FS CAP
18. EU FS CAP
24. PR for FS
26. FSE Spt Status
41. BDE INTSUM
46. Est of En Strength/Disp
47. Tgt List (I)
60. Unit Prog Rpt
62. EOOB
65. Bde/Bn SITREP
67. AVN Sortie Status
91. Bde/Bn PDS
92. CAPE Rpt
93. PR for Log Spt

02 NUCLEAR RELEASE REQUEST

1. Request for Use of Subpackage *
2. Purpose
3. Timespan (in minutes)
4. Area of Subpackage
5. Employment Constraints
6. Weapons
7. Number and Size of Weapons
8. Justification

*Nuclear subpackages must be planned in advance. These subpackages must be in the form of a Corps Frag Order (FSE) and must be assimiliable by the simulation.

03D MISSION ANALYSIS*

1. Purpose
2. Time to be Accomplished
3. Personnel Considerations
4. Essential Elements of Information
5. Courses of Action
6. Logistic Considerations
7. Fire Support Considerations

*This format is only used by players within a populated command module. Upon receipt of a new mission from corps, it is used as a guide to prepare an analysis of the new mission. This analysis will be used only by populated staff modules as a basis for preparing staff estimates.

04D COMMANDER'S GUIDANCE*

1. Summary of Mission Analysis
2. General Plan for NBC Warfare
3. Courses of Action to be Developed
4. Essential Elements of Information
5. Other Factors
   a. Logistic Considerations
   b. Personnel
   c. Reserves
   d. Fire Support

*This format is only used by players within a populated command module. It is to be used in conjunction with the mission analysis by populated staff modules as a basis for completing staff estimates.

05 COMMANDER'S DECISION*

A	B
1. Proposed Release	1. Execute
2. Concur __ Nonconcur __ (Added to a completed frag order)	(Added to a completed frag order)

*Decision A is the command module response (whether populated or simulated) to the request for release of a frag order from any of the staff modules. Decision B is for use by a populated command module when initiating a frag order.

10 QUERY BY FIRE SUPPORT ELEMENT*

1. Message required __.
2. DTG of Need
3. Required of all units (Yes ___, No ___; if no complete 4)
4. Specific Battalions
   a.
   b.
   c.
   d.
   e.

*The following list indicates the allowable queries for the FSE module.

Class 3

15. Arty SITREP
16. Tgt List (Arty)
17. FU FS CAP
18. EU FS CAP
24. PR for FS
26. FSE Spt Status

Class 2

41. BDE INTSUM
46. Est of En Strength/Disp
47. Tgt List (I)
60. Unit Prog Rpt
62. EOOB
65. Bde/Bn SITREP
67. AVN Sortie Status
91. Bde/Bn PDS
92. CAPE Rpt
93. PR for LOG SP

11D QUERY ON CORPS FRAG ORDER (FIRE SUPPORT)

This is a free text query by a populated FSE of CORPS (controller).

12 FRAG ORDER (FIRE SUPPORT)

A. (Change to FS Plan/Annex)

1. Frag Order Number
2. Enemy Situation
3. Friendly Situation
4. Any Change to Task Organization
5. Orders to Subordinate Units
6. Fire Support Considerations
7. Coordinating Instructions

B. (Fire Mission)

1. Fire Mission Number
2. Target Location
3. Target Description
4. Quantity
5. Activity/Movement
6. Vulnerability
7. DTG (of Observation)
8. DTG (TOT)
9. Target Number
10. Fire Control

"A" would be used to attach/detach elements; change support role, priority of fire, coordination measures, etc.

"B" would be used to order a fire mission.

13, 14, 23, 24 REQUEST FOR ADDITIONAL FIRE SUPPORT*

ARTY/NGF

1. Target Description
2. Quantity
3. Target Priority
4. Vulnerability
5. Activity/Movement
6. Location/Elevation
7. Attitude
8. Length/Width
9. DTG
10. Method of Engagement
11. Method of Fire & Control

CAS

1. Target Description
2. Quantity
3. Target Priority
4. Vulnerability
5. Activity/Movement
6. Location/Elevation
7. Attitude
8. Length/Width
9. DTG (TOT)
10. Recommended Aircraft & Ordnance
11. Tactical Situation
12. Nearest Friendlies
13. Final Control

*This requests may be either preplanned or immediate. Preplanned requests are forwarded periodically or after a query by the FSE/Command Group (#24). Immediate requests are forwarded after need arises. DTG will be replaced by ASAP (#23). The division aggregates these respective request and forwards to corps or adjacent headquarters (13 and 14).

15 ARTY SITREP*

1. Period Covered (FM DTG to DTG)
2. Location of Unit Command Post and Closing Time
   a. Location of Battalion Centers
   b. Direction of Center of Zone of Fire
   c. Proposed New Location and Effective Time
3. No Fire Line
4. Number of Missions Fired
5. Enemy Casualties
6. Materiel Destroyed
   a. Type/Number
7. Personnel Losses
   a. KIA
   b. WIA
8. Ammunition Status

Type	Rounds on Hand	Rounds Expended During Period
a. HE		
b. Smoke		
c. Other		
d. Total		

9. Shortages of Personnel/Equipment/Fuel/Ammunition which Effect Unit/Mission
10. Combat Effectiveness
11. Plans for Support of Future Operations/Incidents of Immediate Value

*This SITREP is sent to FSE by the DIV ARTY. DIV ARTY must aggregate the required information from task organized artillery units.

16 TARGET LIST* (ARTILLERY)

1. Target Number
2. Description
3. Location
4. Remarks
5. Results

*Same information is required for each target.

17 FRIENDLY FIRE UNIT CAPABILITY*

1. Unit
2. Callsign (Telephone/Radio)
3. Present Location
4. Time Reported Displaced
5. Proposed Location
6. Time Closed
7. Center of Sector
8. Mission (Direct Support, Etc.)
9. Active (Tubes/Launcher)
10. Readiness
11. Remarks

*This is a table which is repeated for each unit. In manual mode lowest reported unit will be a battalion - for a staff with ADP assistance the lowest reported unit will be a battery.

18 ENEMY UNIT FIRE SUPPORT CAPABILITY*

1. Known and Suspected Artillery BNS
   a. Type
   b. Quantity
   c. Self Propelled/Towed
   d. Range
   e. Location (Estimate)
   f. Nuclear Capable?
2. Relative ARTY Strength Ratio (Enemy/Friendly)
3. Estimate of Enemy Ammunition Resupply Rate
4. Remarks

*Estimate of enemy ammunition resupply rate has to be included in initial data - primary source for remaining info is from counter battery/mortar radars via DIV ARTY.

19 POST STRIKE ANALYSIS*

1. Target Description
2. Location of Ground Zero
3. Subpackage:___ /TOT: ___
4. Estimate of Enemy Casualities
   a. Personnel
   b. Equipment
5. Estimate of Civilian Casualties
6. Estimate of Enemy's Capability to Continue the Fight

*Used by FSE module to ascertain affects of nuclear strike by friendly forces. Post Strike Damage reports from the G2 are required to conduct the analysis.

20D FIRE SUPPORT ANNEX*

1. General
   a. Concept of Operation
      (1) Maneuver
      (2) Fires
2. Fire Support
   a. FA
      (1) General
      (2) Organization for Combat
      (3) Special Instructions
   b. CAS
      (1) General
      (2) Special Instructions
   c. NGF
      (1) General
      (2) Allocation of NGF Support
      (3) Special Instructions
   d. Nuclear
      (1) General
      (2) PNL
   e. Chemical
      (1) General
      (2) PCL
3. Fire Support Coordinating Instructions

*This format is only used by players within a populated FSE module. The format is self-explanatory and is to be used as a guideline by the players for producing a Fire Support Annex as required.

21 REQUEST BY FIRE SUPPORT ELEMENT*

A	B	C
1. Proposed Release	1. Please Execute	1. Please Review
2. Concur __ Nonconcur __ (Added to a completed Frag Order (FS))	2. Concur __ Nonconcur __ (Added to a completed Frag Order)	2. Concur __ Nonconcur __ (Added to a completed Frag Order (FS))

*Request A is forwarded to the command module for a decision when the content of the Frag Order (FS) broaches thresholds as established by the commanders guidance or delegated authority.

Request B is for use by a populated FSE module when initiating a frag order not within its purview. The message is sent to the staff module having staff cognizance.

Request C is for use by the FSE module when a proposed frag order requires a "chop" from another staff module.

22 RESPONSE TO REQUEST

The response to request B consists of the information copy of the Frag Order (FSE) if accepted by the FSE or the return of the request if not.

The response to request C consists of the request including the completed Frag Order in question with concurrence or non-concurrence filled in as appropriate (see 21).

The response to a query is the appropriate Class 4 event.

25 TARGET (INTELLIGENCE)

1. DESCRIPTION
2. LOCATION
3. EVALUATION/SOURCE
4. REMARKS

26 FIRE SUPPORT ELEMENT SUPPORT STATUS*

A. Air Defense Artillery

1. Type Unit
2. Location
3. Readiness Condition
4. Alert Status
5. Quantity of "GO" Missiles
6. Range

B. Tactical Air Sorties

1. Preplanned
   a. Number and Type Aircraft
   b. Target
   c. Ordnance
   d. Expected Time of Arrival
   e. Supported Unit
2. On Call
   a. Number and Type Aircraft
   b. Target
   c. Ordnance
   d. Alert Status
   e. Supported Unit
3. Immediate
   a. Number and Type Aircraft
   b. Ordnance
   c. Alert Status

C. Nuclear, Biological, Chemical

1. Means
2. Yield
3. TGT Number
4. Description
5. Aim Point

*These formats used to keep the FSE module abreast of the ADA, TAS, and NBC situation. Each ADA unit will be represented in A. B1, 2, or 3 will be available for each TAS mission. C is used to define nuclear subpackage. Multiple targets are contained within each subpackage.

27 QUERY ON FRAG ORDER (FS)

The format for this message will be the received message with notations indicating technical inaccuracies.

28D FIRE SUPPORT SPECIAL ESTIMATE/ANNEX*

A. Air Defense Artillery

1. Situation
   a. Enemy Forces (TAS capability)
   b. Friendly Forces (air defense unit)
   c. Assumptions
2. Mission
3. Execution
   a. Unit Tasks
   b. Control of Fire
   c. Alert Status
   d. Electronic Warfare
   e. Priorities for Protection
   f. Coordinating Instructions
4. Service Support
   a. General
   b. Materiel Services
5. Command and Signal

B. Tactical Air Sorties

1. Situation
   a. Enemy Forces (Air Defense, etc.)
   b. Friendly Forces (Aviation Units)
   c. Assumptions
2. Mission
3. Execution
   a. Close Air Support
      (1) Preplanned
      (2) On Call
      (3) Immediate

*These formats are input to a populated FSE module for use in preparing a Fire Support Annex. These documents must be prepared in advance of the play of the game.

28D FIRE SUPPORT SPECIAL ESTIMATE/ANNEX (Continued)

B. Tactical Air Sorties (cont.)

3. Execution

b. Air Reconnaissance

c. Electronic Warfare

d. Air Lift

e. Aircraft Status

(1) Type

(2) Number Available

(3) Maintenance Status

(4) Alert Status

f. Coordinating Instructions

(1) Air Request Procedure

(2) Air Support Radar Teams

4. Service Support

a. General

b. Materiel Services

(1) POL

(2) Air Bases

5. Command and Signal

C. Nuclear, Biological, Chemical

1. Situation

a. Enemy Forces

b. Friendly Forces

c. Assumptions

(1) Defense Severely Tested

(2) Corps Requests Nuclear Package

(3) Chemical Authorization

2. Mission

a. Provide Nuclear Fire Support

b. Provide Chemical Fire Support of Division

28D FIRE SUPPORT SPECIAL ESTIMATE/ANNEX (Continued)

C. Nuclear, Biological, Chemical (cont.)

3. Execution
   a. Nuclear
      (1) Concept (subpackages A, B, etc.)
      (2) Constraints
      (3) Nuclear Warning Order
      (4) Nuclear Aimpoints
   b. Chemical
      (1) Concept of Employment
      (2) Targets
   c. Coordinating Instructions
      (1) Weather
      (2) Authorization Procedures
4. Service Support
   a. General
   b. Materiel Services
5. Command and Signal

29D CORPS FRAG ORDER (FIRE SUPPORT)*

A. (Change to FS Plan/Annex)
   1. Frag Order Number
   2. Enemy Situation
   3. Friendly Situation
   4. Any Change to Task Organization
   5. Orders to Subordinate Units
   6. Fire Support Considerations
   7. Coordinating Instructions

B. (Fire Mission)
   1. Fire Mission Number
   2. Target Location
   3. Target Description
   4. Quantity
   5. Activity/Movement
   6. Vulnerability
   7. DTG (of Observation)
   8. DTG (TOT)
   9. Target Number
   10. Fire Control

*These formats are used by the controller to interject investigator objectives into the play of the game. "A" would be used to attach/detach elements; change support role, priority of fires, coordination measures, etc. "B" would be used to order a fire mission.

30 QUERY BY INTELLIGENCE STAFF*

1. Message Required ___.
2. DTG of Need
3. Required of all units (Yes ___, No ___; if no complete 4)
4. Specific Battalions
   a.
   b.
   c.
   d.
   e.

*The following lists indicate the allowable queries for the G2 module.

Class 3

41. BDE INTSUM
46. EST of EN Strength/Disp
47. TGT List (I)

Class 2

15. Arty SITREP
16. Tgt List (Arty)
17. FU FS CAP
18. EU FS CAP
24. PR for FS
26. FSE SPT Status
60. Unit Prog Rpt
62. EOOB
65. BDE/BN SITREP
67. AVN SortiesStatus
91. BDE/BN PDS
92. CAPE Rpt
93. PR for Log SPT

31D QUERY ON CORPS FRAG ORDER (INTELLIGENCE)

This is a free text query by a populated G2 of Corps (controller).

32 FRAG ORDER (INTELLIGENCE)

1. Mission Number
2. DTG of Need
3. Subject/Description
4. Location
5. Task
6. Change in EEI

33D DIVISION INTSUM*

1. Summary of Enemy Activity
   a. Ground
   b. Trace of Forward Elements
   c. Potential Targets for Nuclear Attack
   d. Nuclear Activity
   e. Chemical/Biological Activity
   f. Air Activity
   g. Other
2. Enemy Personnel/Equipment Losses
   a. KIA
   b. POW
   c. Equipment Destroyed/Captured
3. Counter Intelligence
4. Obstacles/Barriers
5. Identifications
   a. Units
   b. Personalities
6. Enemy Movements
7. Estimated Number and Type Vehicles
8. Weather/Terrain
9. Capabilities/Vulnerabilities
10. Conclusions

*This report is an aggregation of subordinate units and ASAC reports. It is forwarded to Corps by populated G2 modules.

34 NBC REPORT

	#1		#2		#3		#4	#5
	N	BC	N	BC	N	BC	N	N
A. STRIKE SERIAL NUMBER	X		X	X	X	X		X
B. POSITION OF OBSERVER	X	X						
C. AZIMUTH OF ATTACK	X	X						
D. DTG OF ATTACK	X	X	X	X	X	X		
E. ILLUMINATION TIME (SEC) /ATTACK ENDED	X	X				X		
F. LOCATION OF ATTACK	X	X	X	X	X	X		
G. MEANS OF DELIVERY	X	X	X	X		X		
H. TYPE OF BURST/AGENT	X	X	X	X		X		
I. NUMBER OF ROUNDS						X		
J. FLASH-TO-BANG (SEC) TO BURST	X							
K. CRATER PRESENT OR ABSENT	X							
L. NUCLEAR CLOUD WIDTH (@ H+5 MIN)	X							
M. STABILIZE CLOUD TOP OR BOTTOM ANGLE @ H+10 MIN	X							
N. ESTIMATED YIELD			X					
O. REFERENCE DTG (NOT H+1)								X
P. AREA OF EXPECTED CONTAMINATION						X		
Q. LOCATION OF READING							X	
R. DOSE RATE							X	
S. DTG OF READING		X					X	
T. DTG OF H+1								X
U. 1000 RAD/HR								X
V. 300 RAD/HR								X
W. 100 RAD/HR								X
X. 30 RAD/HR						X		X
Y. L&R RADIAL LINES					X			
Z. EFFECTIVE WIND SPEED					X			

35 WEATHER FORECAST

1. Period (FM ___; TO ___)
2. Synoptic Condition
3. Sky Condition
4. Visibility
5. Precipitation
6. Weather Phenomena
7. Temperature
8. Humidity
9. Winds (Speed, Direction)
10. Pressure and Density
11. Surface Conditions
12. Turbulence and Icing Aloft
13. Light Data

36 INTELLIGENCE PARAGRAPH OF SITREP

1. Enemy Situation
   a. Units in Contact
   b. Enemy Reserves That Affect Local Situation
   c. Brief Description of Enemy Activity During Period of Report
   d. Brief Estimate of Enemy Strength, Materiel, Morale, and His Estimate of Our Situation
   e. Conclusions Covering Courses of Action Open to the Enemy

37D INTELLIGENCE ESTIMATE*

1. Mission
2. The Area of Operation
    a. Weather
        (1) Existing Situation
        (2) Effect on Enemy Courses of Action
    b. Terrain
        (1) Existing Situation
            (a) Observation and Fire
            (b) Concealment and Cover
            (c) Obstacles
            (d) Key Terrain
            (e) Avenues of Approach into Our Postion
        (2) Effect on Enemy Courses of Action
        (3) Effect on Our Course of Action
3. Enemy Situation
    a. Dispostions
    b. Composition
    c. Strength
        (1) Committed Forces
        (2) Reinforcements
        (3) Air
        (4) Nuclear - Biological - Chemical
    d. Recent and Present Significant Activities
    e. Peculiarities and Weaknesses
        (1) Personnel
        (2) Intelligence
        (3) Operations
        (4) Logistics
        (5) Civil Affairs
        (6) Personalities

*This format is only used by players within a populated G2 module. The format is self-explanatory and is to be used as a guideline by the player for producing an intelligence estimate.

37D INTELLIGENCE ESTIMATE (cont.)

4. Enemy Capabilities
    a. Enumeration
    b. Analysis and Discussion
        (1) Attack
        (2) Defend
        (3) Delay
        (4) Reinforce
        (5) Withdraw
        (6) Air
        (7) Nuclear
5. Counterintelligence
    a. Enemy Intelligence
        1. Ground Surveillance and Reconnaissance
        2. Aerial Surveillance and Reconnaissance
        3. Signal Intelligence
        4. Guerrillas/Insurgents
        5. Espionage
    b. Sabotage
    c. Subversion
6. Conclusions
    a. Utilization of Terrain
    b. Probable Courses of Action
    c. Vulnerabilities

38D INTELLIGENCE ANNEX*

1. Summary of Enemy Situation
2. Essential Elements of Information
   a. Essential Elements of Information
   b. Other Intelligence Requirements
3. Intelligence Acquisition Tasks
   a. Orders to Attached and Subordinate Units
      (1) 1st BDE
      (2) 2nd BDE
      .
      .
      .
      (n) EWIOC
4. Measures for Handling Personnel, Documents, and materiel
5. Documents and/or Equipment Required
   a. Maps
   b. *Photographic*
6. Counterintelligence
7. Reports and Distribution
8. Miscellaneous Instructions

*This format is only used by players within a populated G2 module. The format is self-explanatory and is to be used as a guideline by the players producing an Intelligence Annex.

39 REQUEST BY INTELLIGENCE STAFF*

A	B	C
1. Proposed Release	1. Please Execute	1. Please Review
2. Concur __ Nonconcur __ (Added to a completed Frag Order (INTELL))	2. Concur __ Nonconcur __ (Added to a completed Frag Order)	2. Concur __ Nonconcur __ (Added to a completed Frag Order (INTELL)

*Request A is forwarded to the command module for a decision when the content of the Frag Order (INTELL) broaches thresholds as established by the commanders guidance or delegated authority.

Request B is for use by a populated G2 module when initiating a frag order not within its purview. The message is sent to the staff module *having staff cognizance.*

Request C is for use by the G2 module when a proposed frag order requires a "chop" from another staff module.

40 RESPONSE TO REQUEST

The responses to request B consists of the information copy of the Frag Order in question if accepted by the G2 or the return of the request if not.

The response to request C consists of the request including the completed Frag Order (I) with concurrence or non-concurrence filled in as appropriate (see 39).

The response to a query is the appropriate Class 4 event.

41 BRIGADE/BATTALION INTSUM

1. Summary of Enemy Activity
   a. Ground
   b. Trace of Forward elements
   c. Potential Targets for Nuclear Attack
   d. Nuclear Activity
   e. Chemical/Biological Activity
   f. Air Activity
   g. Other
2. Enemy Personnel/Equipment Losses
   a. KIA
   b. POW
   c. Equipment Destroyed/Captured
3. Counter Intelligence
4. Obstacles/Barriers
5. Unit Identifications
6. Enemy Movements
7. Estimated Number and Type Vehicles
8. Weather
9. Capabilities/Vulnerabilities
10. Conclusions

42 SHELL REPORT

1. Reporting Unit
2. Location of Observer
3. Azimuth of Attack
4. Time of Attack
5. Area Attacked
6. Type Delivery
7. Nature of Attack
8. Number of Rounds
9. Flash-to-Bang Time (SEC)
10. Damage

43 SPOT REPORT*

INFO \ SOURCE	ASA	SOTAS	RPV	GSR	UGS	FO	P/H
TIME	x	x	x	x	x	x	x
LOCATION	x	x	x	x	x	x	x
DIR MOVE		x		x		x	x
RATE MOVE		x		x		x	x
UNIT SIZE	x						x
UNIT TYPE	x						x
# TANKS			x			x	x
# APC's			x			x	x
# ARTY TUBES					x	x	x
# UNK VEHICLES		x	x	x	x	x	x
# TROUPS			x	x		x	x
UNIT ID	x					x	x
RECEIVING ELEMENT	DIV	DIV/ BDE	DIV/ BDE	BN	BDE/ BN	BDE/ BN/DIV	BDE/ DIV

*Reports generated by division assets within BOG. Table indicates type info forwarded by each "sensor" (from "fource" model). Only those reports forwarded to division will be forwarded. Others will be used in #44.

FO = FORWARD OBSERVER/RECON
UGS = UNATTENDED GROUND SENSOR
GSR = GROUND SURVEILLANCE RADAR
RPV = REMOTELY PILOTED VEHICLE
SOTAS = STAND OFF TARGET ACQUISITION SYSTEM
ASA = ARMY SECURITY AGENCY
P/H = PRISONER OF WAR/HUMAN INTELLIGENCE

44 COMBAT INTELLIGENCE REPORT*

1. Time
2. Location
3. Direction of Movement
4. Rate of Movement
5. Unit Size
6. Unit Type
7. Number of Tanks
8. Number of APCs
9. Number of Arty Tubes
10. Number of Unknown Vehicles
11. Number of Troops

*BN/BDE has several sensors that submit "spot reports" directly to them in the format of #443. These reports from SOTAS, RPV, GSR, UGS and other sources will be processed/aggregated at brigade. If the resultant intelligence is above a certain threshold this report will be forwarded to division through the ASAC.

45 POST STRIKE DAMAGE REPORT*

CONVENTIONAL*

1. Estimated Percentage of Target Area Damaged
2. Estimate of Personnel Casualties
3. Estimate of Equipment Losses
4. Estimate of Units Effectiveness

NUCLEAR**

1. Air/Ground Burst
2. Location of Ground Zero
3. Estimated Percentage of Target Area Damaged
4. Estimate of Personnel Casualties
5. Estimate of Equipment Losses
6. Estimate of Unit Effectiveness
7. Effects on Terrain

*Format derived to obtain timely assessment of enemy capabilities after an indirect weapon engagement. Tasking accomplished by G2 and results reported to G2. G2 retransmits results to G3/FSE for informational purposes.
**Format derived to facilitate post strike analysis by the FSE. G2 tasks subordinate units for the collection of this information. Units report observable attributes to G2 who in turn retransmits to FSE. FSE conducts post strike analysis IAW FM 101-31-1.

46 ESTIMATE OF ENEMY STRENGTH/DISPOSITION

1. Composition and Disposition
   a. Type Unit
   b. Location
   c. Organization
2. Strength (by unit identified)
3. Tactics
4. Logistics
5. Combat Effectiveness
   a. Overall
   b. By unit identified

47 AGGREGATE TARGET LIST (INTELLIGENCE)*

1. Description
2. Location
3. Evaluation/Source
4. Remarks

*Same information is repeated for each target.

48 QUERY ON FRAG ORDER (INTELL)

The format for this message will be the received message with notations indicating technical inaccuracies.

49D CORPS FRAG ORDER (INTELLIGENCE)*

1. Mission Number
2. DTG of Need
3. Subject/Description
4. Location
5. Task
6. Change in EEI

*This format is used by the controller to interject investigator objectives into the play of the game.

50 QUERY BY OPERATIONS STAFF*

1. Message Required ___
2. DTG of Need
3. Required of all units (Yes ___, No ___; if no complete 4)
4. Specific Battalion
   a.
   b.
   c.
   d.
   e.

*The following lists indicates the allowable queries for the G3 module.

Class 3

60. Unit Prog Rpt
62. EOOB
65. Bde/Bn SITREP
67. AVN Sortie Status

Class 2

15. Arty SITREP
16. Tgt List (Arty)
17. FU FS CAP
18. EU FS CAP
24. PR for FS
26. FSE Spt Status
41. BDE INTSUM
46. Est of En Strength/ Disp.
47. Tgt List (I)
91. Bde/Bn PDS
92. CAPE Rpt
93. PR for Log Spt

51D QUERY ON CORPS FRAG ORDER (OPERATIONS)

This is a free text query by a populated G3 of Corps (controller).

52 FRAG ORDER (OPERATIONS)

OPERATIONS

1. Frag Order Number
2. Enemy Situation
3. Friendly Situation
4. Any Change to Task Organization
5. Orders to Subordinate Units
6. Fire Support Considerations
7. Coordinating Instructions

ELECTRONIC WARFARE*

1. Frag Order Number
2. Friendly Situation
3. Any Change to Task Organization
4. EW Mission Priority
5. Any Change to EW Target Priority List
6. Coordinating Instructions

*The EW Frag Order is forwarded to the ASAC for compliance.

53D DIVISION SITREP*

1. Enemy Situation
   a. Units in Contact
   b. Enemy Reserves that Affect Local Situation
   c. Brief Description of Enemy Activity during Period of Report
   d. Brief Estimate of Enemy Strength, Materiel, Morale and his Estimate of our Situation
   e. Conclusions Covering Courses of Action Open to Enemy
2. Friendly Situation
   a. Location of Forward Elements
   b. Location of Units/Headquarters/Boundaries
   c. Location of Adjacent Units/Support Troops
   d. Brief Description and Results of Operations during Period of Report
   e. Noneffective Units
3. Administration-General Statement as it Effects Tactical Situation
4. General Information not Covered Elsewhere
5. Commander's Evaluation (Complete When Directed)

*This SITREP is sent by a populated G3 to corps. It is an aggregate of reports from subordinate brigades, DIV ARTY, and other maneuver units under the direct control of the division. Some "CAPE" type information will be included in paragraph 3.

54 NUCLEAR WARNING ORDER

O. Nuclear Warning Order Number

A. Code Word ($\Rightarrow$ Nuclear Strike)

D. DTG of Burst + DTG of Cancellation

F. Desired Ground Zero

H. Air/Surface Burst

I. MSD 1, 2, 3 in Hundreds of Meters

Y. Left and Right Radial Lines

Z. Effective Wind Speed

ZI. Effective Wind Speed/Downwind Distance I, II, Cloud Radius

55 AIR DEFENSE WARNING*

1. Air Defense Warning
2. Direction of Attack
3. Size of Attack
4. Predicted Target

*Issuance of this warning to subordinate units may reduce their combat effectiveness.

56 REQUEST FOR RESERVES*

1. Concur ___ Non-concur ___
2. Frag Order Number
3. Enemy Situation
4. Friendly Situation
5. Orders to Corps Reserves
6. Fire Support Considerations
7. Coordinating Instructions

*This format is used by the G3 module to request commitment of the corps reserves. The Frag Order is sent to corps where it is acted upon by the controller.

57D OPERATIONS PLAN*

Task Organization

1. Situation
   a. Enemy Forces
   b. Friendly Forces
   c. Attachments and Detachments
2. Mission
3. Execution
   a. Concept of Operation
      (1) Maneuver
      (2) Fires (Air/Arty/NGF/Nuclear)
   b. 1st Brigade
   c. 2nd Brigade
   d. 3rd Brigade
   e. Fire Support
      (1) Field Artillery
         (a) General
            1 Priority of Fires
            2 Counter Priority
         (b) Organization for Combat
         (c) Special Instructions
      (2) Close Air Support
         (a) General
         (b) Distribution for Planning Purposes
         (c) Special Instructions
      (3) Naval Gunfire
         (a) General
         (b) Allocation of Naval Gunfire Support
         (c) Special Instructions

*This format is only used by players within a populated G3 module. The format is self-explanatory and is to be used as a guideline by the players for producing an operations plan as required.

57D OPERATIONS PLAN (Continued)

(4) Nuclear
  (a) General
  (b) PNL
(5) Chemical
  (a) General
  (b) PCL
(6) Fire Support Coordinating Instructions
  (a) Fire Planning and Control
  (b) Safety

f. Air Defense Artillery
g. Engineer
h. Division Troops
i. Division Support Command
j. Reserve
k. Coordinating Instructions

4. Service Support
5. Command and Signal

ANNEXES:
DISTRIBUTION:

58D OPERATIONS ESTIMATE*

1. Mission
2. The Situation and Courses of Action
   a. Considerations Affecting Possible Courses of Action
      (1) Characteristics of the area of operation
         (a) Weather
         (b) Terrain
         (c) Other
      (2) Enemy Situation
      (3) Friendly Situation
      (4) Relative combat Power
   b. Enemy Capabilities
   c. Own Courses of Action (C/A)
3. Analysis of Opposing Courses of Action
   a. C/A 1 versus Enemy Capabilities plus other selected considerations - (To determine the Advantages and Disadvantages and develop a General Scheme of Maneuver)
   b. C/A 2 versus Enemy Capabilities plus other selected considerations - (To determine the Advantages and Disabvantages and develop a General Scheme of Maneuver)
4. Comparison of Own Courses of Action
   C/A 1 -- Significant Advantages -- Significant Disadvantages
   C/A 2 -- Significant Advantages -- Significant Disadvantages
   Discussion: Compare C/A 1 and C/A 2
   Conclusion: Course of action to select for adoption
5. Decision (Recommendation). Scheme of maneuver based on selected C/A

*This format is only used by players within a populated G3 model. The point is self-explanatory and is to be used as a quideline by the players for producing an operations estimate. Intelligence inputs will be required.

59 INITIAL ENEMY CONTACT

1. Engaged/DTG
2. Location
3. Estimated Size of Enemy Force
4. Type Fire Receiving
5. Direction and Distance Fire Coming From
6. Friendly Casualties
7. Activity
8. Required Support

60 UNIT PROGRESS REPORT*

IN CONTACT

1. Location of Forward Units
2. Location of Unit HQ/Boundaries
3. Enemy Casualties
4. Enemy Equipment Destroyed
5. Personnel Losses
6. Shortages Which Effect Unit/MSN
   a. Personnel
   b. Equipment
   c. POL
   d. Ammunition
7. Activity/DTG
8. Combat Effectiveness

NOT IN CONTACT

1. Location of Forward Units
2. Activity/DTG
3. Remarks

*Reports will be forwarded on basis of enemy contact. Activity descriptor will be filled in accordingly, e.g., - (in contact) - engaging, advancing, retreating, enemy withdrew, withdrew from enemy, seized objective - (not in contact) - begin movement, passed check point, passed phase line, passed line of departure, assembly area, closed new position.

61 LOSS CONTACT WITH FRIENDLY UNIT*

1. Loss Contact
2. Identification (Lost Unit)
3. Last Known Location (Lost Unit)
4. Was Unit in Contact?
5. Was Unit Moving? (Direction/Rate)
6. Action Being Taken
7. Support Required (Aerial Observor, etc.)

*This event may be triggered by the controller or may be part of initialization data.

62 ENEMY ELECTRONIC ORDER OF BATTLE

1. Voice Communication Nets
   a. Unit
   b. Location
   c. Frequency
   d. Net Usage
   e. Frequency of Use
2. Multichannel Communication Nets
   a. Units
   b. Location
   c. Net Usage
   d. Frequency
3. Non-Communication Emitters
   a. Unit
   b. Purpose of Emitter
   c. Location
   d. Type Emitter
   e. Frequency

63 REQUEST BY OPERATIONS STAFF*

A	B	C
1. Proposed Release	1. Please Execute	1. Please Review
2. Concur __ Nonconcur __ (Added to a completed Frag Order (OPS))	2. Concur __ Nonconcur __ (Added to a completed Frag Order)	2. Concur __ Nonconcur __ (Added to a completed Frag Order (OPS))

*Request A is forwarded to the command module for a decision when the content of the Frag Order (OPS) broaches thresholds as established by the commanders guidance or delegated authority.

Request B is for use by a populated G3 module when initiating a frag order not within its purview. The message is sent to the staff module having staff cognizance.

Request C is for use by the G3 module when a proposed frag order requires a "chop" from another staff module.

64 RESPONSE TO REQUEST

The response to Request B consists of the information copy of the Frag Order (OPS) if accepted by the G3 or the return of the request if not.

The response to Request C consists of the request including the completed Frag Order in question with concurrence or non-concurrence filled in as appropriate (see 63).

The response to a query is the appropriate Class 4 event.

65 BRIGADE/BATTALION SITREP*

1. Enemy Situation
   a. Units In contact
   b. Enemy Reserves That Affect Local Situation
   c. Brief Description of Enemy Strength, Materiel, Morale and his Estimate of our Situation
   d. Conclusions Covering Courses of Action Open to Enemy
2. Friendly Situation
   a. Location of Forward Elements
   b. Location of Units/Headquarters/Boundaries
   c. Location of Adjacent Units/Support Troops
   d. Brief Description and Results of Operations During Period of Report
   e. Non-effective Units
3. Administration - General Statement as it Effects Tactical Situation
4. General Information not Covered Elsewhere
5. Commander's Evaluation (Complete When Directed)

*This SITREP is sent to G3 by subordinate brigades and other maneuver units under the direct control of the division. Reporting centers must aggregate information from task organized infantry units. Paragraphs 1 & 2 may require simulated historical file. This would allow for changes to be reported. Some "CAPE" type info will be included in paragraph 3. Controller will provide info under 4 and 5.

66 AIR DEFENSE ALERT*

1. Air Defense Warning
2. Weapons Control
3. Direction of Attack
4. Size of Attack

*Air Defense Artillery units will forward this message (based upon radar reports) to G3. The G3 will disseminate message to affected friendly units.

67 ORGANIC AVIATION SORTIE STATUS

1. Period Coverage FM DTG to DTG
2. Type Mission* (Gunship/Troop Lift/Resupply/MEDEVAC)
3. Number Missions Scheduled
4. Number Missions Completed
5. Number of Missions Cancelled
6. Results* (IN PERS/EQUIPCASUALTIES/TROOPS MOVED/CARGO MOVED/ MEDEVACS)
7. Quantity of Aircraft
   a. Type Gunship:
   b. Transport:
   c. Resupply:
   d. MEDEVAC:
   e. C^2:

*This format is used to indicate army aviation sortie status. Paragraph 2 and 6 will be applicable to specific type missions and mission results.

68 QUERY ON FRAG ORDER (OPS)

The format for this message will be the received message with notations indicating technical inaccuracies.

69 QUERY ON NUCLEAR WARNING ORDER

The format for this message will be the received message with notations indicating technical inaccuracies.

70 QUERY ON AIR DEFENSE WARNING

The format for this message will be the received message with notations indicating technical inaccuracies.

71D CORPS FRAG ORDER (OPERATIONS)*

Operations

1. Frag order number
2. Enemy Situation
3. Friendly Situation
4. Any Change to Task Organization
5. Orders to Subordinate Units
6. Fire Support Considerations
7. Coordinating Instructions

Electronic Warfare

1. Frag order number
2. Friendly Situation
3. Any change to task organization
4. EW mission priorities
5. Any change to EW target priority list
6. Coordinating instructions

*These formats are used by the controller to interject investigator objectives into the play of the game.

72D OPERATIONS SPECIAL ESTIMATE/ANNEX*

A. Army Aviation
   1. Situation
      a. Enemy forces
         (1) Ground forces
         (2) Enemy air defense capabilities
      b. Friendly forces
      c. Attachment/detachments
   2. Mission (aviation support operations)
   3. Execution
      a. Concept of operations
      b. Aviation unit tasks
         (1) MED EVAC
         (2) Resupply
         (3) Trooplift
         (4) Gunship
      h. Priority of support
      g. Coordinating instructions
         (1) FAC Operations
         (2) VFR air traffic control
   4. Service support
      a. Ordnance
      b. POL
      c. Maintenance
      d. Airbases
   5. Command and signal

B. Communications
   1. Situation
      a. Enemy situation
      b. Friendly situation
      c. Area of operations
         (1) Terrain
         (2) Weather
         (3) Existing Comm
   2. Mission (comm support operations)
   3. Execution
      a. Concept of operations
      b. Communication unit tasks
         (1) Tactical radio
         (2) Multichannel
         (3) Wire and cable
         (4) Messenger
      h. Priority of support
      g. Coordinating instructions
         (1) MIJI Reports
         (2) EW
         (3) CEOI
   4. Service support
   5. Command and signal

72D (CONTINUED)

C. Engineer

1. Situation
   a. Enemy situation
   b. Friendly situation
   c. Area of operations
      (1) Terrain
      (2) Weather
2. Mission (engineer support operations)
3. Execution
   a. Concept of operations
   b. Engineer unit tasks
      (1) Barriers
      (2) Obstacles
      (3) Mine fields
      (4) Construction
   h. Priority of support
   g. Coordinating instructions
4. Service support
5. Command and signal

*These formats are only used by players within a populated G3 model. The formats are proposed in advance and issued by the controller from record as required for planning purposes.

80 QUERY BY COMBAT SERVICE SUPPORT ELEMENT*

1. Message required
2. DTG of need
3. Required of all units (YES ___; NO___; if no complete 4)
4. Specific battalions
   a.
   b.
   c.
   d.
   e.

*The following lists indicate the allowable queries for the G1/G4 module:

Class 3

91 Bde/Bn PDS
92 CAPE Rpt
93 PR for LOG Spt

Class 2

15 Arty SITREP
16 Tgt List (Arty)
17 FU FS Cap
18 EU FS Cap
24 PR for FS
26 FSE Spt Status
41 Bde/INTSUM
46 Est of En Strength/Disp
47 Tgt List (I)
60 Unit Prog Rpt
62 EOOB
65 Bde/Bn SITREP
67 Avn Sortie Status

81D QUERY ON CORPS FRAG ORDER (COMBAT SERVICE SUPPORT)

This is a free text query by a populated G1/G4 of Corps (controller)

82 FRAG ORDER (COMBAT SERVICE SUPPORT)

A. Change to Combat Service Support Annex

1. Frag Order Number
2. General
3. Materiel and Services (Changes)
   a. Supply (Changes by Class)
   b. Transportation
   c. Services
   d. Maintenance
4. Medical Evacuation and Hospitalization
5. Personnel
6. Civil Military Cooperation
7. Miscellaneous

B. Medical Evacuation

1. Medevac Number
2. Unit/Callsign
3. Location (Pickup)
4. Number Wounded
5. Type Wounds
6. Number of Litter and Ambulatory
7. Tactical Situation
8. Precedence
9. Location (Delivery)

C. Resupply

1. Resupply Number
2. Unit/Callsign
3. Location (Delivery)
4. DTG of Delivery
5. LZ/Free Drop
6. Tactical Situation
7. Precedence
8. General List of Items

82 FRAG ORDER (COMBAT SERVICE SUPPORT)* (Continued)

D. Troop Lift

1. Troop Lift Number
2. Unit/Callsign
3. Location (Pickup)
4. Number of Troops/Type Equipment
5. Tactical Situation (Pickup)
6. DTG (Pickup)
7. Location (Delivery)
8. DTG (Delivery)
9. Tactical Situation (DROP)
10. Precedence

*Formats B, C, D are in response to requests from subordinate, adjacent or higher headquarters. The G4 must determine who and how request will be handled and transmit this message to that unit with copy to requestor.

83D DIVISION PERSONNEL DAILY SUMMARY*

1. Strength (Assigned/Authorized)
2. Daily Losses
   a. Casualties (KIA/WIA/MIA/Captured)
   b. Non-battle
3. Cumulative Losses from DTG
   a. Casualties (KIA/WIA/MIA/Captured)
   b Non-battle
   c. Days in Combat (Per Battalion)
4. Gains (Replacements/Returned to Duty)
5. Prisoners of War
   a. Captured
   b. Evacuated
   c. On Hand
   d. Total Taken from DTG
6. Remarks

*This format aggregates those input by subordinate units. It is forwarded to Corps only by a populated G1/G4 module.

84D PERIODIC LOGISTIC REPORT*

1. Logistic situation at end of period
2. Supply
   a. Supported strength
   b. Status of supply
   c. Local procurement
   d. Miscellaneous
3. Service
   a. Transportation
      (1) Highway
      (2) Air
      (3) Rail
      (4) Water
      (5) Pipeline
      (6) Supply movement
      (7) Personnel movement
   b. Construction
   c. Installations
   d. Miscellaneous
4. Maintenance
5. Miscellaneous
   a. Boundaries
   b. Hdq
   c. Changes in assignment
   d. Protection
   e. Plans and orders
   f. Other logistic matters

*Format only used by a populated G1/G4. It provides guidance to the players to enable them to produce the required report.

85D PERSONNEL REQUISITION

1. Present readiness condition ____.
2. Personnel required
   a. Rank
   b. Quantity
   c. MOS
3. Continuous days unit in combat
4. Losses by
   a. KIA
   b. WIA
   c. Non-battle
   d. Other
5. Expected readiness condition if augmented _____.

86D and 93 REQUEST FOR LOGISTICAL SUPPORT*

A. Medical Evacuation**
   1. Location
   2. Number of Wounded
   3. Type Personnel
   4. Type Wounds
   5. Number of Litter and Ambulatory
   6. Tactical Situation
   7. Precedence

B. Resupply*
   1. Resupply
   2. Location
   3. DTG of Delivery
   4. LZ/Free Drop (if by Helo)
   5. Precedence
   6. Tactical Situation
   7. List of Items (Item/Qty)

C. Troop Lift*
   1. Troop Lift
   2. Pickup Location
   3. Number of Troops
   4. DTG of Pickup
   5. Tactical Situation
   6. Delivery Location
   7. DTG of Delivery
   8. Tactical Situation
   9. Precedence

*May be used for immediate (86, 86D) or preplanned (93) logistical requests.
**Used only for immediate requests (86, 86D).

87D COMBAT SERVICE SUPPORT ESTIMATE*

1. Mission
2. The Situation and Courses of Action
   a. Considerations Affecting the Possible Course of Action
      (1) Operations to be supported
      (2) Characteristics of the Area of Operations
      (3) Enemy Situation
      (4) Own Situation
         (a) Tactical
         (b) Personnel
         (c) Logistic
         (d) Civil-Military Operations
   b. Anticipated Difficulties or Difficulty Patterns
   c. Own Course of Action
3. Analysis of Opposing Courses of Action
4. Comparison of Own Course of Action
5. Recommendations

*This format is only used by players within a populated G1/G4 module. The format is self-explanatory and is to be used as a guideline by the players for producing a CSS estimate, as required.

88D COMBAT SERVICE SUPPORT ANNEX*

1. General
2. Materiel and Services
   a. Supply
      (1) Cl I
      (2) Cl II
      (3) Cl III
      (4) Cl IV
      (5) Cl V
      (6) Cl VI
      (7) Cl VII
      (8) Cl VIII
      (9) Cl IX
      (10) Air Resupply
   b. Transportation. Traffic Circulation and Control
   c. Services
   d. Maintenance. Priority of support to _____
3. Medical Evacuation and Hospitalization
4. Personnel
5. Civil-Military Cooperation
6. Miscellaneous

*This format is only used by players with a populated G1/G4 module The format is self-explanatory and is to be used as a guideline by the players for producing a CSS annex, as required.

89 REQUEST BY COMBAT SERVICE SUPPORT STAFF*

A	B	C
1. Proposed Release	1. Please Execute	1. Please Review
2. Concur __ Nonconcur __ (Added to a completed Frag Order (CSS))	2. Concur __ Nonconcur __ (Added to a completed Frag Order)	2. Concur __ Nonconcur __ (Added to a completed Frag Order (CSS))

*Request A is forwarded to the command module for a decision when the context of the Frag Order (CSS) broaches thresholds as established by the commander's guidance or delegated authority.

Request B is for use by a populated G1/G4 module when initiating a Frag Order not within its purview. The message is sent to the staff module having staff cognizance.

Request C is for use by the G1/G4 module when a proposed Frag Order requires a "chop" from another staff module.

90 RESPONSE TO REQUEST

The response to Request B consists of the information copy of the Frag Order (CSS) if accepted by the G1/G4 or the return of the request if not.

The response to Request C consists of the request including the completed Frag Order in question with concurrence or non-concurrence filled in as appropriate (see 89).

The response to a query is the appropriate Class 4 event.

91 BRIGADE/BATTALION PERSONNEL DAILY SUMMARY

1. Strength (Assigned/Authorized)
2. Daily Losses
   a. Casualties (KIA/WIA/MIA/Captured)
   b. Non-Battle
3. Cumulative Losses From DTG
   a. Casualties (KIA/WIA/MIA/Captured)
   b. Non-Battle
   c. Days in Combat (Per Battalion)
4. Gains (Replacements/Returned to Duty)
5. Prisoners of War
   a. Captured
   b. Evacuated
   c. On Hand
   d. Total Taken From DTG
6. Remarks

92 CAPE REPORT*

C. Casualty Spot Report
   1. KIA
   2. WIA
   3. MIA
   4. Non-Battle Losses
   5. Administrative Losses
   6. Assigned Strength (OFF/WO)
   7. Assigned Strength (ENL)

A. Report of Ammo used
   1. Type/Quantity (Repeat as Necessary)

P. Report of POL used
   1. Type/Quantity (Repeat as Necessary)

E. Equipment Status Report (Repeat as Necessary)
   1. Equipment Type
   2. Quantity Lost/Destroyed During Reporting Period
   3. Quantity Inoperable Because of Deficiency
   4. Quantity of "3" not Repairable Because of Lack of Parts/Assemblies
   5. Quantity of Operable Assets on Hand

*Subordinate units may submit each report separately or the the report may be issued in its entirety.

94 QUERY ON FRAG ORDER (CSS)

The format for this message will be the received message with notations indicating technical inaccuracies.

95D CORPS FRAG ORDER (COMBAT SERVICE SUPPORT)*

A. General Frag
   1. Frag Order Number
   2. General
   3. Materiel and Services (Changes)
      a. Supply (Changes by Class)
      b. Transportation
      c. Services
      d. Maintenance
   4. Medical Evacuation and Hospitalization
   5. Personnel
   6. Civil Military Cooperation
   7. Miscellaneous

B. Medical Evacuation
   1. Medevac Number
   2. Unit/Call Sign
   3. Location (Pick up)
   4. Number Wounded
   5. Type Wounds
   6. Number of Litter and Ambulatory
   7. Tactical Situation
   8. Precedence
   9. Location (Delivery)

C. Resupply
   1. Resupply Number
   2. Unit/Call Sign
   3. Location (Delivery)
   4. DTG of Delivery
   5. LF/Free Drop
   6. Tactical Situation
   7. Precedence
   8. General List of Items

*These formats are used by the controller to interject investigator objectives into the play of the game.

95D FRAG ORDER (CSS) (Continued)

D. Troop Lift

1. Troop Lift Number
2. Unit/Call Sign
3. Location (Pick up)
4. Number of Troops/Type Equipment
5. Tactical Situation (Pick up)
6. DTG (Pick up)
7. Location (Delivery)
8. DTG (Delivery)
9. Tactical Situation (Drop)
10. Precedence

*Formats B, C, D reflect tasking from subordinate, adjacent, or higher headquarters. The G4 must determine who and how request will be handled and transmit this message to that unit with copy to corps.

96D DIVISION SUPPORT COMMAND SITUATION REPORT*

1. Logistics Situation
   a. Location of Boundaries
   b. Locations of Installations
   c. Locations of Troops
   d. Transportation
   e. Service
   f. Miscellaneous
2. Supply
   a. Supported Strength
      (1) Military Personnel
      (2) Prisoners of War
      (3) Civilians
   b. Status of Supply
      (1) Levels
      (Class of Supply/Authorized/Issued/On Hand)
      (2) Short Supply Items
      (Class of Supply/Authorized/Issued/On Hand)
   c. Local Procurement
   (Description/Quantity/Value)
   d. Miscellaneous
      (1) Excess
      (2) Salvage
      (3) Captured Materials
      (4) Supplies
      (5) Special
         (a) Publications
         (b) Exchange Items
         (c) Civil Affairs
3. Service
   a. Transportation
      (1) Highway
         (a) Transport Vehicles
         (Type/Availability/Operable/Deadline/Category
         Maintenance)

96D DIVISION SUPPORT COMMAND SITUATION REPORT (Continued)*

(b) Tonnage of Supplies
(Number Vehicles/Number People/Runs (Local-Long Range))

(c) Terminal Operations
(Tonnage/Number Vehicles/Number Personnel Loading-Unloading/Equipment Used)

(2) Air

(a) Transport Vehicles
(Type/Availability/Operable/Deadline/Category Maintenance)

(b) Tonnage of Supplies
(Number Vehicles/Number People/Runs (Local-Long Range))

(c) Terminal Operations
(Tonnage/Number Vehicles/Number Personnel Loading-Unloading/Equipment Used)

(3) Rail

(a) Transport Vehicles
(Type/Availability/Operable/Deadline/Category Maintenance)

(b) Tonnage of Supplies
(Number Vehicles/Number People/Runs (Local-Long Range))

(c) Terminal Operations
(Tonnage/Number Vehicles/Number Personnel Loading-Unloading/Equipment Used)

(4) Water

(a) Transport Vehicles
(Type/Availability/Operable/Deadline/Category Maintenance)

(b) Tonnage of Supplies
(Number Vehicles/Number People/Runs (Local-Long Range))

(c) Terminal Operations
(Tonnage/Number Vehicles/Number Personnel Loading-Unloading/Equipment Used)

(5) Pipeline

(6) Supply Movement

(a) Tonnage

(b) Location

(c) Destination

96D DIVISION SUPPORT COMMAND SITUATION REPORT*

(7) Personnel Movement

(a) Number

(b) Location

(c) Destination

b. Construction
(Project/% Completed/Project Operable/Completion Date)

c. Installations
(Installations not Covered/Work Load/Class of Work)

d. Miscellaneous
(Real Estate/Laundry/Bath/Clothing Exchange/Decontamination)

4. Maintenance

a. Class Awaiting Maintenance

b. Received during Period

c. Completed during Period

d. On Hand Beginning/End of Period

5. Miscellaneous

a. Boundaries

b. Headquarters

c. Changes in Assignment

d. Protection

e. Plans and Orders

f. Other Logistic Matters

*This format is only used when the G1/G4 is populated. It is provided as required by the controller from record.

97D CIVILIAN/MILITARY OPERATIONS ESTIMATE/ANNEX*

1. Mission
2. Situation and Considerations
   a. Intell Situation
      (1) Characteristics of AO and its Effect on CMO
      (2) Enemy Strength/Dispositions and their Effect on CMO
      (3) Enemy Capability
   b. Tactical Situation
      (1) Own
      (2) Possible Causes of Action
   c. Personnel Situation
   d. Logistical Situation
   e. Assumptions
   f. CMO Situation and Nature of Operations to be Supported
   g. Special Factors
3. Analysis
   a. Government Functions
      (1) Civil Government
      (2) Public Safety
      (3) Public Health
      (4) Labor
   b. Economic Functions
      (1) Commerce and Industry
      (2) Food and Agriculture
      (3) Civilian Supply
   c. Public Facilities
   d. Special Functions
4. Comparison
   a. Courses of Action
      (1) Advantages
      (2) Disadvantages
   b. Discussion

97D CIVILIAN/MILITARY OPERATIONS ESTIMATE/ANNEX* (Continued)

5. Conclusions
   a. Civil Affair Spt
   b. Tactical Course of Action Recommendation
   c. Deficiencies Requiring Commander's Attention

*Format only used by a populated G1/G4. It is provided as required by the controller from record.

DESIGN NOTE E

CLASS 3 EVENTS

E.1 GENERAL

Class 3 events represent the outcome (i.e., class of decision variables) of internal staff action and/or interaction which affect the battle outcome generator (BOG) or tactical messages to corps, adjacent divisions or special staff officers. The defined Class 3 events are contained in Appendix E-1. These events correspond to the table of Class 3 events given in subsection 4.1.2. These interface events allow the division staff to task/query subordinate units represented within the BOG; keep senior commanders informed of the battle within the division area of operations and/or request additional support as necessary, query the special staff on the current status of special purpose units organic to the division; or provide tasking on electronic warfare or intelligence collection to the EWIOC of the CEWI battalion.

- Class 3 interface events will trigger battle (Class 5) events when the recipients of the messages are represented within the BOG. In some cases, they may simply be requests for additional information from subordinate units.

- Corps and adjacent divisions will not be represented within the BOG. Hence, any Class 3 messages directed to these units will be received, processed, and acted upon by the controller(s). Controller processing of these Class 3 events will include posting the receipt time of messages received from populated modules, filing the tactical documents in record, and providing responses as necessary. Responses will be delayed by the controller to reflect realistic transmission and processing times.

Specific design considerations for Class 3 events are discussed below.

E.2 CLASS 3 EVENTS WHICH AFFECT THE BOG

The first set of Class 3 events that will be considered are those which affect the BOG. The units represented within the BOG consist of all maneuver and fire support units subordinate to the division plus the engineer battalion, signal battalion, Army and Air Force aviation elements, air defense elements, cavalry squadron, and the CEWI battalion.

E.2.1 Frag Orders

The first type of Class 3 events within this set are frag orders. Frag orders contain one or more tasks to be accomplished or implemented by units within the BOG during the execution of the simulation. Each principal staff element (except the Command Group) may issue frag orders to the BOG. Information copies of the frag order are forwarded to corps and adjacent divisions. A frag order may be issued by a staff section only within its own area of responsibility (e.g., maneuver elements and priority of fires are the G3's concern and intelligence collection tasking is within the purview of the G2). This design implies that the commander does not issue orders directly to subordinate units but does so only through his principal staff sections. The design also dictates that no individual task may be executed within the BOG until the entire frag order is issued correctly.

When a populated staff module issues a frag order, the BOG will review the order for technical accuracy. In the event an error is detected, the BOG will "query" the issuing staff module. The query will be a copy of the frag order indicating the technical errors. The issuing staff module will correct the errors and resubmit the corrected frag order as the response. The BOG will not review the frag orders for tactical considerations.

Frag orders issued by simulated modules will be "edited" by the same procedure as that used with populated modules, but a query will not be generated back to the issuing staff module. Instead the simulator will make an error stop.

E.2.2 Warning Orders

The second type within this set covers warning orders. The G3 module has the capability to issue air defense warnings and nuclear warning orders to subordinate units represented within the BOG. The BOG will review these orders, in a manner similar to the frag orders, and disseminate them to concerned units. The dissemination of the warning orders will probably result in the reduction of combat effectiveness for some units. Accordingly, it is incumbent upon the G3 module, whether populated or simulated, to delineate to which units these warnings should be addressed. Copies of these warning orders are also provided to corps and adjacent divisions for information purposes.

E.2.3 Queries

The third and final type of Class 3 event within this set are "queries" which can be generated by each module. Essentially, these are requests for additional or updated information on periodically triggered reports prepared within the BOG (e.g., BDE/BN SITREP or BDE INTSUM) or planning documents from special staff officers. Each

principal staff module is restricted to requesting information or data within its own purview. The response from the BOG will be an appropriately updated Class 4 event (see Design Note F). The CG is allowed to query any subordinate unit represented within the BOG for any of the periodic Class 4 events. For our purposes, those periodic Class 4 events which emanate from the special staff are considered to be coming from subordinate units. Queries from populated modules pertaining to planning documents "prepared by" special staff officers will be responded to by the controller. These planning documents will be stored in record and distributed as required.

Queries transmitted from any staff module will be reviewed and edited at event time for technical accuracy. If an error is detected, the query will not be transmitted, i.e., entered into the simulation.

Request for information not within a staff element's purview are submitted to the responsible staff module. Appropriate Class 2 responses are discussed in Design Note G.

E.3 CLASS 3 EVENTS TO CORPS AND ADJACENT DIVISIONS

The remaining Class 3 events, or outputs by the division staff, are directed to corps and/or adjacent divisions.

E.3.1 Periodic Reports

The first type of Class 3 event within this set are those events that represent periodic reports to headquarters, e.g., DIV INTSUM and DIV SITREP. These reports will only be prepared by populated modules since they only reflect historical aspects of the "battle" and will not affect the outcome of the battle. The Operation Plan, as developed by a populated G3 module, is included in this type even though it is not an historical document. This concept of having only populated modules produce these documents is consonance with our original design concept. However, players within the populated modules may use similar reports from units represented within the BOG as the basis for their reports. No response is expected or required from the controller. The reports will be filed in record and only used to assist in the measurement of populated staff performance.

E.3.2 Requests

The second type within this set covers requests for the use of resources external to the division. With the exception of the Personnel Requisition and the Immediate Request for Logistical Support the responses to these requests may be able to affect the outcome of the battle ongoing within the simulation. Accordingly,

requests for additional resources will be sent to corps or adjacent divisions by populated and simulated modules, as appropriate, with the exception of the two events mentioned above. These two requests will only be forwarded by populated modules since responses to these requests will not have an immediate affect on the battle outcome as previously mentioned. Requests will be in the form of frag orders requesting concurrence or non-concurrence by the senior or adjacent commander. As before, requests may only be forwarded by the staff module which exercises staff cognizance. The only exception to this design consideration is the Nuclear Release Request. The relative importance of this request dictates that it only be released by the Command Group module.

It is incumbent upon the controller to respond to these requests in a timely and realistic manner if he is to avoid unduly biasing the results of the battle or the populated staff performance.

E.3.3 NBC Reports

The next event considered to be within this set is the NBC Report as disseminated by the G2 module. This report reflects ongoing events within the simulation and is forwarded to corps and adjacent division commanders for their information. No response by the controller is required.

E.3.4 Queries

The fourth and final type of Class 3 event within this set are queries by populated modules to corps. These information exchanges are free text and will arise when players within populated modules do not fully understand a frag order as issued by corps. Responses to queries of this type must be provided by the controller.

E.4 DISCUSSION OF APPENDIX E.1

All Class 3 events are identified in Appendix E-1. The identication of a Class 3 event includes the event number, the tactical information message included in the event, the preparing module, the module version (populated/simulated or populated) capable of preparing the message, the receiving module and any information copies required to be sent. The event number consists of the one digit event class plus the two digit reference number associated with each tactical information message listed in Design Note A. Specific formats for each of these Class 3 events are contained in Design Note D where they are listed by reference number. The Class 2 event number listed for some of the events in Appendix E-1 indicates that particular event is also distributed to one or more principal staff modules for information purposes.

Appendix E-1

DEFINED CLASS 3 EVENTS

EVENT NO	EVENT	FROM	MODULE VERSION	TO	INFO
301	QUERY	CMD	POP/SIM	BOG	-
302 (202)	NUC REL REQ	CMD	POP/SIM	CORPS	-
310	QUERY	FSE	POP/SIM	BOG	-
311D	QUERY	FSE	POP	CORPS	-
312 (212)	FRAG ORDER (FS)	FSE	POP/SIM	BOG	CORPS/ADJ DIV
313 (213)	DIR FIRE SPT	FSE	POP/SIM	CORPS	ADJ DIV
314 (214)	DPR FIRE SPT	FSE	POP/SIM	CORPS	-
330	QUERY	G2	POP/SIM	BOG	-
331D	QUERY	G2	POP	CORPS	-
332 (232)	FRAG ORDER (I)	G2	POP/SIM	BOG	CORPS/ADJ DIV
333D (233D)	DIV INTSUM	G2	POP	CORPS	-
334 (234)	NBC REPORT	G2	POP/SIM	CORPS	ADJ DIV
350	QUERY	G3	POP/SIM	BOG	-
351D	QUERY	G3	POP	CORPS	-
352 (252)	FRAG ORDER (OPS)	G3	POP/SIM	BOG	CORPS/ADJ DIV
353D (253D)	DIV SITREP	G3	POP	CORPS	-
354 (254)	NUC WARNING ORDER	G3	POP/SIM	BOG	CORPS/ADJ DIV
355 (255)	AD WARNING	G3	POP/SIM	BOG	CORPS/ADJ DIV
356	REQ FOR RESERVES	G3	POP/SIM	CORPS	-
357D (257D)	OP PLAN	G3	POP	CORPS	-
380	QUERY	G1/G4	POP/SIM	BOG	-
381D	QUERY	G1/G4	POP	CORPS	-
382 (282)	FRAG ORDER (CSS)	G1/G4	POP/SIM	BOG	CORPS/ADJ DIV
383D (283D)	DIV PDS	G1/G4	POP	CORPS	-
384D (284D)	PER LOG RPT	G1/G4	POP	CORPS	-
385D (285D)	PERS REQ	G1/G4	POP	CORPS	-
386D	IR LOG SPT	G1/G4	POP	CORPS	-

DESIGN NOTE F

CLASS 4 EVENTS

F.1 GENERAL

Class 4 events represent tactical information messages to individual staff elements from subordinate units represented within the BOG or higher and adjacent headquarters. These Class 4 interface events represent tasking from corps; response, tactical information of an immediate utility of historical nature, immediate or preplanned requests from adjacent units or units simulated in the BOG. For design purposes these messages may be classified by source, i.e., whether they emanate from the BOG or higher and adjacent headquarters, and by the method with which they are initiated or triggered. The defined Class 4 events are contained in Appendix F-1 and correspond to the table of Class 4 events given in subsection 4.1.2. Specific design considerations for the Class 4 events are discussed below.

F.2 CLASS 4 EVENTS GENERATED BY THE BOG

Class 4 events stemming from the BOG are the basic vehicles by which the command and staff modules acquire and maintain their perceived data bases concerning the division-level combat. These events may be initiated or triggered in one of four ways as discussed below.

F.2.1 Queries

The first type of Class 4 events generated by the BOG are "queries" on the technical accuracy of frag orders or warning orders issued by populated principal staff modules (i.e., the G2, G3, G1/G4 and the FSE). A Class 4 query is triggered by any technical error in a frag or warning order issued by a populated staff module. The query will be as indicated in Design Note E and will be addressed to the issuing module.

F.2.2 Immediate Battle Events

The second type of Class 4 events are triggered by the occurrence of battle (Class 5) events within the BOG. These events represent tactical information of an immediate nature or an immediate request for support and are addressed to the principal staff module having overall cognizance as indicated in Appendix F-1. For example, simulated subordinate units within the BOG may transmit a spot report to the G2 as a result of an intelligence collecting activity or they may transmit a request for support to the G4 when the requirement arises as a result of the combat activity represented within the BOG. These type messages are one time transmittals and the information con-

tained within the messages will not be retained or stored as such in the real data base. Accordingly, the staff modules (and the command group) will not be allowed to query the simulated units within the BOG directly on these event-triggered messages to obtain more accurate or additional information.

F.2.3 Periodic Battle Events

Tactical messages representing tactical reports or preplanned requests for support which are submitted to a cognizant staff module on a periodic basis cover the third type of Class 4 event generated by the BOG. They are primarily periodic summary reporting events of tactical information or preplanned requests for additional fire or logistical support, and as such, will normally be triggered by the BOG clock at the appropriate time.

These time triggered events may also be triggered in response to a query from the appropriate staff module or the command group under one of the following conditions: the message was degraded during transmission; the message did not arrive on time; or a timely update is required. These queries may be transmitted by a populated or simulated staff module. Responses to queries from the staff or command modules will be appropriately updated Class 4 events. Reponses to staff module will only be addressed to the requesting staff module. A response to the command module will be addressed to the command module with an information copy to the cognizant staff module.

Event 492, the CAPE reports, may be event or time triggered. These reports represent a "quick assessment" of a unit's personnel and logistics status. The reports may be forwarded by subordinate units immediately after an engagement or they may be forwarded periodically. The CAPE reports may also be triggered in response to a query from a populated G1/G4 module or command module.

F.3 CLASS 4 EVENTS GENERATED BY OTHER THAN THE BOG

The first group of Class 4 events within this set that will be considered are those tactical information messages which emanate from record. The record concept is a repository used by the controller to store those tactical documents which are not directly entered into or generated or received by the division staff, as discussed in Design Note G, are another example of the type of tactical documents stored in record. Selected tactical information messages from corps and special staff officers will be retained in records and entered into the play of the game at appropriate times by the controller. These events must be prepared in advance of the play of the game in accordance with the desired scenario, objectives of the investigator, and the design of the experiment.

It is readily apparent that this group of inputs to the division staff define the basis for the scenario to be played and is the result of the experimental design established in accordance with the objectives of the investigator. These same Class 4 events will be used by the controller in his pre-processing efforts to build the SCENARIO File on magnetic tape. Accordingly, attention to detail in the preparation of these tactical documents will pay dividends in the pre-processing efforts to establish the SCENARIO Files. The record concept, as defined above, and the SCENARIO File comprise the basic tools which provide this simulation with the flexibility to allow adaptation to various scenario situations and major forms of maneuver.

F.3.1 General Situations

All inputs from corps of this type are grouped into one event defined as the General Situation. The General Situation will be given to all populated staff modules prior to the commencement of the game at a time determined by the investigator. After analysis of the General Situation, players may query the investigator/controller for clarification or amplification. The General Situation will include the following information:

- Corps objectives
- Adjacent division's mission and dispositions
- Analysis of area of operations
- Enemy order of battle handbook
- Current periodic intelligence report

F.3.2 Special Situation

The second Class 4 event contained in record defines the Special Situation. This event must also be prepared in advance of the play of the game and represents a detailed brief of the tactical situation to the division staff officers coming on duty. The Special Situation is provided to players within populated modules prior to the commencement of the game and after the players have completed their analysis of the General Situation. Players may query the investigator/controller for clarification or amplification. In addition, players may reassign missions and units within their purview. The Special Situation is actually the division's perception of its own and the opposing forces and will, accordingly, include the following information:

- Division's mission
- Task organization
- Subordinate unit identification, unit type, and unit mission
- Subordinate unit disposition, location and combat effectiveness
- Subordinate units' personnel and logistic status,
- Opposing force disposition, location and combat effectiveness.

F.3.3 Special Staff Officers

The next set of events contained in record are related to special staff officers. Special staff officers are responsible for developing certain estimates and annexes during the preparation of an operations order. When the objectives of the investigator include an evaluation of the planning functions as performed by certain populated modules these estimates and/or annexes must be prepared in advance. These tactical documents are stored in record and made available by the controller to appropriate populated staff modules in accordance with the play of the game. These Class 4 events which represent the planning output of special staff officers are as follows:

- Fire Support Element Special Estimate/Annex
- Operations Special Estimate/Annex
- DISCOM Situation Report
- CMO Estimate/Annex

F.3.4 Corps Orders and Reports

The last set of events contained in this group are those Class 4 events which represent on-going actions from higher and adjacent headquarters. These represent tactical information messages to the division staff from corps or adjacent divisions in accordance with the objectives of the investigation and are used to control the play of the game. These events are normally prepared in advance to satisfy specific investigative objectives, stored in record, and distributed to populated staff modules by the controller in accordance with a pre-established time schedule. However, the investigator will have the flexibility to generate these events after the exercise has started if he ascertains a need to influence the play of the game.

This set of events include the following tactical information transfers:

- Corps frag order (FSE)
- Corps frag order (Intell)
- Corps frag order (Ops)
- Corps frag order (CSS)
- Corps combat intelligence report
- Corps NBC report
- Adjacent division requests *
- Response**

As described above, this group of Class 4 events that emanate from record are only directed toselected populated modules as required by the objectives of the investigation. This group of tactical information transfers is not required to be assimilated by the computer program. The messages are designed to provide additional realism to the simulation and to provide the investigator/controller with a vehicle to directly influence the play of the game. Players within populated modules will be allowed to query corps, adjacent divisions and special staff officers on any of these events in record. Queries and responses are free text formats since none of the information will be directly entered into the computer. However, all tactical documents which enter and leave record will be processed by the controller and input/output times posted within the computer simulation for later analysis.

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* Requests from adjacent divisions are "interrogatory" frag order which define the task or support requests from that division.

** Responses are not prepared in advance. Responses represent corp, adjacent division and special staff answers to free text queries on any of these messages.

F.4 SPECIAL CONSIDERATION

F.4.1 CEWI Bn

Special note must be made of those Class 4 events (i.e., tactical information messages) directed to the G2 and G3 staff modules which originate from organic division intelligence units. The Combat Electronic Warfare Intelligence (CEWI) Battalion is subordinate to the division and is responsible for providing combat intelligence and electronic warfare functions in support of the division. It is recognized that the organization and employment of the CEWI Bn is presently undergoing revision within the U.S. Army. However, since we are primarily interested in the information exchanges between the division staff and the CEWI Bn it is sufficient to model the CEWI Bn implicitly. This will be done via a routine titled the All Source Analysis Center (ASAC), a term which is in current usage for the post-1985 CEWI Bn. The ASAC routine within this simulation will model the EWIOC, TCAC, and BICC of the CEWI Bn and provide for the evaluation of intelligence and electronic warfare tasks within the BOG and for integrated intelligence analysis, dissemination and reporting from intelligence and EW resources within the BOG. The ASAC will collect and evaluate raw information from all sources and forward the following information to G2/G3. Appendix F-1 indicates how each exchange is initiated and the receiving module:

- Weather forecast
- Combat intelligence report
- Aggregated target list (intelligence)
- Enemy electronic order of battle
- Estimate of enemy strength/disposition

F.4.2 Special Staff

Special consideration is also given to those Class 4 events which represent the input to the division staff from the special staff officers with regard to the status of non-maneuver units. The status of these special purpose units will be maintained within the BOG and reported periodically to the cognizance staff module or in response to a query from the appropriate staff module.

- Aviation sortie status
- FSE support status
- Nuclear weapons status
- TACP status
- Air defense artillery status

F.4.3 Multiple Event Formats

Several of the Class 4 events from the BOG are tactical reports or requests which will have multiple formats. These particular Class 4 events represent events which can be grouped under a single generic title. Events 423 and 424, requests for additional fire support, represent immediate and preplanned requests for field artillery, naval gunfire and close air support. Event 426 represents the status of air defense artillery, tactical air sorties, and NBC weapons. Event 443 represents the various spot reports issued by all intelligence collecting activities whether by a maneuver unit or an ASAC asset. The five standard NBC reports are represented by event 434. Event 460 represents unit progress reports for units in contact or not in contact. Casualty, ammunition, POL and equipment status reports are represented by event 492, the CAPE reports. Events 486 and 493 represent immediate and preplanned requests for logistical support including troop lifts and medical evacuations. All other Class 4 events will utilize single formats for the tactical information messages.

F.5 DISCUSSION OF APPENDIX F-1

All Class 4 events are identified in Appendix F-1. The identification of a Class 4 event includes the event number, the tactical information message included in the event, the receiving modules, the source of the event, and the method by which the event is triggered. The event number consists of the one digit event class plus the two digit reference numbers associated with each tactical information message listed in Design Note A. Specific formats for each of these Class 4 events are contained in Design Note D where they are listed by reference number.

Appendix F-1

CLASS 4 EVENTS

EVENT NO.	EVENTS	TO	FROM	TRIGGER
415	ARTY SITREP	FSE	BOG	TIME/QUERY
416	TGT LIST (ARTY)	FSE	BOG	TIME/QUERY
417	FU FIRE SPT CAP	FSE	BOG	TIME/QUERY
418	EU FIRE SPT CAP	FSE	BOG	TIME/QUERY
423	IR FIRE SPT	FSE	BOG	EVENT
423D	IR FIRE SPT	FSE	RECORD	EVENT
424	PR FIRE SPT	FSE	BOG	TIME/QUERY
425	TGT (I)	FSE	BOG	EVENT
426	FSE SPT STATUS	FSE	BOG	TIME/QUERY
427	QUERY (FS)	FSE	BOG	ERROR
428D	FSE EST/ANNEX	FSE	RECORD	EVENT
429D	FRAG ORDER (FS)	FSE	RECORD	EVENT
434	NBC REPORT	G2	BOG	EVENT
434D	NBC REPORT	G2	RECORD	EVENT
435	WX FORECAST	G2	BOG	TIME/QUERY
441	BDE INTSUM	G2	BOG	TIME/QUERY
442	SHELL REPORT	G2	BOG	EVENT
443	SPOT REPORT	G2	BOG	EVENT
444	CBT INTEL RPT	G2	BOG	EVENT
444D	CBT INTEL RPT	G2	RECORD	EVENT
445	POST STRIKE DAM RPT	G2	BOG	EVENT
446	EST OF EN STRENGTH	G2	BOG	TIME/QUERY
447	TGT LIST (C)	G2	BOG	TIME/QUERY
448	QUERY (I)	G2	BOG	ERROR
449D	FRAG ORDER (I)	G2	RECORD	EVENT
459	INITIAL EN CONT	G3	BOG	EVENT
460	UNIT PROG RPT	G3	BOG	EVENT
461	LOSS CONT W/FU	G3	BOG	EVENT
462	EOOB	G3	BOG	TIME/QUERY
465	BDE/BN SITREP	G3	BOG	TIME/QUERY
466	AD ALERT	G3	BOG	EVENT
467	AVN SORTIE STATUS	G3	BOG	TIME/QUERY
468	QUERY (OPS)	G3	BOG	ERROR
469	QUERY (NWO)	G3	BOG	ERROR
470	QUERY (AOW)	G3	BOG	ERROR
471D	FRAG ORDER (OPS)	G3	RECORD	EVENT
472D	OPS EST/ANNEX	G3	RECORD	EVENT

EVENT NO.	EVENTS	TO	FROM	TRIGGER
486	IR LOG SPT	G1/G4	BOG	EVENT
491	BDE/BN PDS	G1/G4	BOG	TIME/QUERY
492	CAPE REPORT	G1/G4	BOG	TIME/QUERY/EVENT
493	PR LOG SPT	G1/G4	BOG	TIME/QUERY
494	QUERY (CSS)	G1/G4	BOG	ERROR
495D	FRAG ORDER (CSS)	G1/G4	RECORD	EVENT
496D	DISCOM SITREP	G1/G4	RECORD	TIME/QUERY
497D	CMO EST/ANNEX	G1/G4	RECORD	EVENT
D	GENERAL SIT	POP MOD	RECORD	EVENT
D	SPECIAL SIT	POP MOD	RECORD	EVENT

DESIGN NOTE G

CLASS 2 EVENTS

G.1 GENERAL

The Class 2 events represent the tactical information transfers between staff modules as the result of staff action or interaction. These interface events will trigger action-handling (Class 1) events within individual simulated staff modules and undefined events within populated modules. The defined Class 2 events for both populated and simulated modules are contained in Appendix G-1. Design Note D contains the formats which are generated by appropriate staff modules to transmit the tactical information contained within the Class 2 events. Before preceding to specific design considerations, a discussion of staff module capabilities and how they interact will be useful.

G.1.1 Staff Module Capabilities

The division principal staff modules (to include the command module) may be populated or simulated in accordance with the objectives of the ARI investigator. It is expected that at least one staff module will be populated in order to conduct any meaningful behavioral science research. The primary emphasis of most investigations will be on the performance of the players in the populated modules. Accordingly, the investigator may require players within populated modules to perform any or all of the functions normally required of that particular staff module. The functions for a populated staff module include planning for future operations, executing the current operation, or reporting interim results of the current operation. All the functions required of a populated staff module will not be duplicated within a simulated staff module for the following reasons.

Computer simulations can assist in the planning functions by providing current information on friendly and enemy forces. However, a simulation cannot plan. Accordingly, simulated staff modules will not contain algorithms to perform planning functions. This limitation does not restrict certain outputs of simulated staff modules from being used by populated modules for planning purposes.

Computer simulations are able to compile necessary information in order to produce reports as evidenced within the ARI simulation by the outputs generated by the BOG. However, most reports generated by a division staff module are only used for historical purposes or, in the case of populated staff modules, they may be a tool for measuring staff performance. In any event, these reports only reflect what has happened within the simulation and have no bearing on future events within the simulation. For these reasons,

simulated staff modules will not contain algorithms for producing historical reports such as a DIV SITREP or DIV INTSUM.

In summary, populated staff modules will perform those functions necessary for producing decision variables or outputs associated with planning, executing and/or reporting the battle. Simulated staff modules will only perform those functions necessary for producing outputs associated with executing the battle.

G.1.2 Staff Module Outputs

The functions of a staff module, whether live or populated, normally result in a tactical information transfer to higher or adjacent headquarters, subordinate units, special staff officers or other principal staff modules. (Implicit in the exchange between principal staff modules is the coordination required of the division staff.) The tactical information transfers may be either directive, informative or interrogatory in nature and are defined as either Class 2 or Class 3 events. Class 2 events represent exchanges internal to the division staff while Class 3 events represent exchanges external to the division staff. Class 3 events were discussed in Annex E. The outputs of the staff modules are not exclusively Class 2 or Class 3 events. A single staff action may result in a Class 2 and a Class 3. For example, a frag order produced by the G3 module triggers both a Class 3 event and a Class 2 event. The frag order transfers tactical directives to subordinate units and information to higher and adjacent headquarters (Class 3) while transfering tactical information for coordination purposes to principal staff modules (Class 2). There are Class 2 events, however, which are only internal to the division staff and, similarly, there are Class 3 events for which information copies are not provided to other staff modules.

G.1.3 Staff Module Data Transfers

Populated staff modules will be provided standard forms for recording information to be transfered externally from the module for each of the allowable Class 2 and Class 3 events (See Design Note D). Players may use the forms to initiate action, respond to requests or any other action necessary to affect interaction with other staff modules or the simulation. All outputs of populated modules will enter the simulation via the controller who will distribute the output as indicated by the players. Outputs of simulated staff modules will automatically be distributed among the staff modules in accordance with the distribution of Appendices E-1 and G-1. One copy will be retained by the controller for record purposes. Specific design considerations for Class 2 events are discussed below.

G.1.4 Staff Module Configurations

The preceding discussion clarified some of differences between populated and simulated staff modules in terms of their capabilities and outputs. These outputs, Class 2 events, will be handled in a different manner for each of four alternative subconfiguration arrangements.

First of all, if both the sending and receiving staff modules are simulated versions, then the tactical information transfer events will be represented simply by time delays commensurate with the normal administration delays between the elements. Exchanges will be limited to that tactical data which is current, associated with the execution of the battle, and within the purview of the transmitting and receiving staff modules.

If, secondly, the message exchange event is from a live player version to a simulated module, then the event will be executed just like a Class 3 event as far as the live players are concerned. That is, hard copy will be presented to the controller in both cases. If the event is concerned with the execution of the battle, and it affects the simulation, the controller will enter it into the simulation with appropriate time delays. If the event concerns planning or historical reports or it does not affect the simulation the controller will enter it into the record.

If, thirdly, the message exchange event is an input from a simulated module to a live player version, then the event will appear to be a Class 4 event to the live players. The message will come directly from the simulation if it relates to the ongoing battle. If it is a required input for planning purposes it will come from record via the controller.

Finally, if the message exchange events occur in a configuration in which both staff modules are live player versions, the Class 2 events will not interact with the simulation. However, the event transactions will be recorded by the controller and will appear as a TTY printout to the receiving module. These Class 2 events between populated modules are only minimally constrained in that the exchange must be within the objectives of the investigation and they must be hardcopy, i.e., oral exchanges are not permitted.

G.2. CLASS 2 EVENTS

Class 2 events may be grouped into the following four separate categories.

G.2.1 Information Events

The first group contains those Class 2 events which are precipitated by a staff module as a result of and concurrently with Class 3 events. These Class 2 events represent information copies to principal staff modules as the result of a tactical information transfer external to the division staff. If the initiating staff module is simulated, the internal distribution (Class 2 event) will be as indicated in Appendix G-1 while the external distribution (Class 3 event) will be as shown in Appendix E-1. If the releasing module is populated both internal and external distribution will be as indicated by the players of that particular staff module. The Class 2 events which are precipitated as a result of a Class 3 event are as follows:

- Nuclear Release request
- Frag Order (Fire Support)
- Division Immediate Request for Fire Support
- Division Preplanned Request for Fire Support
- Frag Order (Intelligence)
- Division INTSUM*
- NBC Report
- Frag Order (Operations)
- Division SITREP*
- Nuclear Warning Order
- Air Defense Warning
- Operation Plan*
- Frag Order (Combat Service Support)
- Division Personnel Daily Summary*
- Periodic Logistic Report*
- Personnel Requisition*

In the event the G3 module is populated and required to produce a SITREP, the Arty SITREP and Intelligence paragraph of the SITREP can be requested as inputs from the FSE and G2 modules, respectively. This is true whether these modules are populated or simulated. When the G3 module is not populated, there is no requirement for the Arty SITREP or the Intelligence paragraph of the SITREP to be output by simulated modules since these outputs are historical in nature and, as such, do not affect the ongoing simulation.

*Output by populated staff modules only.

G.2.2 Planning Events

The second major grouping of Class 2 events includes those events which precipitate planning, reflect the results of ongoing planning or are the final product of planning. As stated previously, these outputs related to planning will only be produced by populated staff modules. Under certain circumstances a populated staff module may require inputs of this nature from a simulated staff module. If this is the case, the input would be provided in a timely manner by record (via the controller). This input would appear to be the populated staff modules as if it came from another populated module. For example, if one of the objectives of the investigation was to have the populated G3 module produce an Operation Plan, the G3 would need, inter alia, a Fire Support Annex. When the FSE module is also populated, the players within the FSE module will prepare the Fire Support Annex. If the FSE module were being simulated, it would be necessary to prepare the Fire Support Annex in advance of the play and have the controller input it to the populated G3 at the appropriate time. The following Class 2 events are directly related to planning and will only be output by a populated module. To reiterate, if it is known that a planning output is required from a simulated module by a populated module during the play of the game, the output must be prepared in advance and placed in record.

- Mission Analysis
- Commander's Guidance
- Fire Support Annex
- Intelligence Estimate
- Intelligence Annex
- Operations Estimate
- Operations Plan
- Combat Service Support Estimate
- Combat Service Support Annex.

G.2.3 Tactical Information Events

The third major grouping of Class 2 events categorize those transfers of information among staff which occur more or less on a routine basis. These events transfer tactical information from a staff module having staff cognizance to specific staff modules which require the information routinely as an aid in making timely decisions. This grouping of events has no standard Class 3 counterpart. However, it is conceivable that higher and adjacent commands may query the division commander on this category of Class 2 events. Simulated Staff modules will transfer this information to the staff modules indicated

in Appendix G-1, whether populated or simulated, on a periodic basis. Updates will be provided when significant changes occur. Populated staff modules will transfer the information, via the controller, as determined by the players internal procedures. The third group includes the following Class 2 events:

- Target List (Artillery)
- Friendly Unit Fire Support Capabilities
- Enemy Unit Fire Support Capabilities
- Weather Forecast
- Electronic Order of Battle.

G.2.4 Staff Coordination Events

The final major grouping of Class 2 events contains the following exchanges among staff modules (including the command module):

- Request
- Staff query
- Retransmit message
- Response.

This group of Class 2 events represent what in the real world is an unstructured exchange of information that occurs internal to the division staff in order to coordinate planning, execution, and reporting of the battle. Since such exchanges in the simulation involve simulated modules, they must be structured and formatted for simulation purposes. Table G-1 indicates the various Class 2 responses to staff queries, requests, decisions, and retransmitted messages. Design considerations for each of these exchanges are postulated below.

Class 2 Request Events are requests by a particular staff module directed to the command module or another staff module. These requests are limited to requests for release of frag orders and represent the staff coordination that must occur internal to the division staff prior to the release of a message that is directive in nature. Requests will be in the form of a completed frag order (a Class 3 event) with an indicator for requesting release approval. Class 2 Requests may occur in one of the following three ways:

(1) Staff modules will forward requests to the command module when the content of the frag order has broached a certain threshold as established by the commander's guidance and/or the limits of delegated authority.

(2) Staff modules will forward requests to another staff module requesting concurrence on the release of a specific frag order when the release of that frag order contains information within the purview of the other staff module.

(3) Populated staff modules may ascertain the necessity for the release of a frag order not within their purview. In this event the populated staff module will forward a request to a staff module having staff cognizance recommending that it be released.

Within a simulated staff module, algorithms for Class 1 events must allow for requests to be staffed as outlined above. Populated staff modules will establish internal procedures for releasing or requesting the release of frag orders. It should be noted that the response by a command module to a request from a staff module will be the commander's decision as described below in paragraph G.2.5. Responses to the second type request will be the return of the completed frag order indicating concurrence or non-concurrence by the reviewing staff module. The response to the third type request will be a copy of the issued frag order or its return with non-concurrence.

Staff queries are the second category of Class 2 events within this grouping. Staff queries simulate the continuous and informal coordination that occurs between and among the division staff. Essentially, these staff queries are requests for additional or updated information and, as such, will only be directed to staff modules having cognizance over the type of information desired. Simulated staff modules are restricted to formulating staff queries on the execution of the battle only and the queries will be transmitted directly to the cognizant staff module whether populated or simulated. Staff queries in the simulated modules will be prompted by insufficient or obsolete data required to compile an output by that staff module. This required output may be a Class 2 or a Class 3 event. Populated staff modules have a greater latitude in formulating queries in that they may initiate queries concerning planning, executing and reporting at the players discretion. All staff queries originating from populated staff modules will be routed through the controller as are all other outputs of populated modules. The controller will "release" the staff query to the staff module(s) as indicated and will provide the response, when available, from populated staff modules or record. Responses from simulated staff modules will be transmitted directly from the simulation. Each staff module will maintain current status of information within its purview. It is this information that is subject to queries from other staff modules. The maintenance of information is at the discretion of the players within populated modules. Within simulated modules the following files will be maintained:

Table G-1. Responses to Staff Queries, Requests, Decisions by the Commander, and Retransmitted Messages.

CLASS 2 EVENT (STAFF COORDINATION MESSAGE)	RESPONSE (BY)			
	COMMAND MODULE		STAFF MODULE	
	POPULATED	SIMULATED	POPULATED	SIMULATED
STAFF QUERY BY COMMAND OR STAFF MODULE			CURRENT DATA ON FILE RELATED TO THE QUERY	MOST CURRENT CLASS 4 EVENT RELATED TO THE QUERY
REQUEST OF COMMAND MODULE FOR RELEASE OF "FO" GENERATED BY COGNIZANT STAFF MODULE	"DECISION" ON FRAG ORDER INDICATING CONCURRENCE OR NONCONCURRENCE	"DECISION" ON FRAG ORDER INDICATING CONCURRENCE OR NONCONCURRENCE		
REQUEST FOR STAFF CONCURRENCE ON RELEASE OF "FO" BY COGNIZANT STAFF MODULE			FRAG ORDER RETURNED INDICATING CONCURRENCE OR NONCONCURRENCE	FRAG ORDER RETURNED INDICATING CONCURRENCE OR NONCONCURRENCE
*REQUEST FOR RELEASE OF "FO" GENERATED BY NON-COGNIZANT STAFF MODULE			COPY OF RELEASED FRAG ORDER IMPLIES CONCURRENCE RETURN OF REQUEST INDICATES NON-CONCURRENCE	COPY OF RELEASED FRAG ORDER IMPLIES CONCURRENCE RETURN OF REQUEST INDICATES NON-CONCURRENCE
*DECISION DIRECTIVE TO RELEASE "FO" GENERATED BY COMMAND MODULE			COPY OF RELEASED FRAG ORDER INDICATES CONCURRENCE	COPY OF RELEASED FRAG ORDER INDICATES CONCURRENCE
RETRANSMIT				

*INITIATED BY POPULATED MODULE ONLY.

FIRE SUPPORT ELEMENT

- Target List (Artillery)
- Friendly Unit Fire Support Capabilities
- Enemy Unit Fire Support Capabilities
- Fire Support Element Support Status

G2

- Estimates for Enemy Strength/Dispositions

G3

- Friendly Unit Locations
- Unit Progress
- Aviation Sortie Status

G1/G4

- Unit CAPE Report
- Unit Personnel Daily Summary

It should be noted that these files are in reality Class 4 events and represent current data on the execution of the battle as perceived by each staff module. The staff module responsible for maintaining the data receives it from the simulation via Class 4 events. (See Design Note F.) The data will be maintained at the battalion level of resolution. Accordingly, staff modules will be able to "query" the complete "file" or one or more specific organic battalions.

This leads directly to the next category of events within this grouping, the response. A response is the answer to a request for release of a frag order or staff query and as such, completes the staff coordination cycle. Response to frag orders are as discussed above. Responses to staff queries will be directed to the requestor and will be a copy of the indicated file (a Class 4 event) with only the requested data filled in. If the response comes from a populated module it will be routed through the controller, otherwise, it will be sent directly to the requesting module. Responses will be subject to delays and the information may be degraded to represent realisitc response times and inaccuracies inherent in manually recording information.

The last category of events within this grouping of Class 2 events is the retransmit event. The retransmit event provides staff modules the capability to retransmit any received message to the command module or another staff module as deemed appropriate. This will

occur when the content of the message is time sensitive or of such impact that the use of normal channels may adversely affect the mission of the division. Retransmittals of a received message are only allowed when the desired recipient (as determined by the receiving module) is not on the initial distribution list. The tactical information messages which may be retransmitted by a particular staff module are as indicated in Design Note A.

G.2.5 Miscellaneous Events

There are two events which do not fit neatly into these groupings as discussed above. These two events are the Decision by the Command Group Module and the Post Strike Analysis by the Fire Support Element Module. A decision by the Command Module is an output of the Command Module to one or more of the principal staff modules. A decision by a simulated Command Module will only be provided in response to a request for release of a frag order by one of the principal staff modules. For example, a simulated or populated G3 module may determine that it is opportune to commit a portion of the organic reserves. If that portion broaches a certain threshold as established by the commanders guidance, then the G3 would send a completed frag order (directing the commitment of the reserves) to the Command Module will consist of the format being returned to the G3 with permission being either granted or denied. A populated Command Module may provide a decision to staff modules in this same manner. In addition, however, a populated Command Module may initiate a decision. This decision will be in the form of a completed frag order transmitted to the appropriate staff module directing that it be output by the Fire Support Element Module, populated or simulated, only after a nuclear strike has been authorized and completed within the division area of interest The Post Strike Analysis will be based upon the post strike damage reports from subordinate and adjacent units and will be used in the decision process of the command, G2 and G3 modules.

G.2.6 Error Detection

The Class 2 events, as discussed in the preceding paragraphs, represent the continuous and informal coordination and "staffing" process that occurs on a division staff as a result of staff action or interaction. Any internal requirements in staff actions are effected by these message exchange events. Every message exchange of this kind will have to be carefully edited and interpreted by the controller(s) and/or computer before the change is instituted in the real world data base. If the message contains any ambiguities or logical inconsistencies associated with the war game variables, the controller(s) and/or computer must simulate the request for clarification back to the staff module and wait for a consistent message.

G.3 DISCUSSION OF APPENDIX G-1

All Class 2 events are identified in Appendix G-1. The identification of a Class 2 event includes the event number, the tactical information message included in the event, the preparing module, the module version (populated and simulated or populated) capable of preparing the message, and the receiving modules. The event number consists of the one digit event class plus the two digit reference number associated with each tactical information message listed in Design Note A. Specific formats for each of these Class 2 events are contained in Design Note D where they are listed by reference number. Notes on specific categories of messages are included in the Appendix.

Appendix G-1

CLASS 2 EVENTS

EVENT NO.	EVENT	FROM	MODULE VERSION	TO[1]
201	QUERY	CMD	POP/SIM	SELECTED STAFF
202	NUC REL REQ	CMD	POP/SIM	G3
203D	MSN ANAL	CMD	POP	ALL LIVE STAFF
204D	CMDR GUID	CMD	POP	ALL LIVE STAFF
205	CMDR DEC	CMD	POP/SIM	SELECTED STAFF
2XX	RETRANSMIT	CMD	POP/SIM	SELECTED STAFF
210	QUERY	FSE	POP/SIM	SELECTED STAFF
212	FRAG ORDER (FS)	FSE	POP/SIM	ALL STAFF
213	DIR FIRE SPT	FSE	POP/SIM	G3
214	PPR FIRE SPT	FSE	POP/SIM	G3
215	ARTY SITREP	FSE	POP/SIM	LIVE G3/G1/G4
216	TGT LIST (ARTY)	FSE	POP/SIM	G2/G3
217	FU FIRE SPT CAP	FSE	POP/SIM	G3
218	EU FIRE SPT CAP	FSE	POP/SIM	G2/G3
219	POST STRIKE ANAL	FSE	POP/SIM	CMD/G2/G3
220D	FIRE SPT ANNEX	FSE	POP	LIVE G3
221	REQUEST	FSE	POP/SIM	SELECTED STAFF
222	RESPONSE	FSE	POP/SIM	SELECTED STAFF
2XX	RETRANSMIT	FSE	POP/SIM	SELECTED STAFF
230	QUERY	G2	POP/SIM	SELECTED STAFF
232	FRAG ORDER (I)	G2	POP/SIM	ALL STAFF
233D	DIV INTSUM	G2	POP	ALL LIVE STAFF
234	NBC REPORT	G2	POP/SIM	ALL STAFF
235	WX FORECOST	G2	POP/SIM	ALL STAFF
236	INPUT TO DIV SITREP	G2	POP/SIM	LIVE G3
237D	INTELL EST	G2	POP	ALL LIVE STAFF
238D	INTELL ANNEX	G2	POP	LIVE G3
239	REQUEST	G2	POP/SIM	SELECTED STAFF
240	RESPONSE	G2	POP/SIM	SELECTED STAFF
2XX	RESTRANSMIT	G2	POP/SIM	SELECTED STAFF
250	QUERY	G3	POP/SIM	SELECTED STAFF
252	FRAG ORDER (OPS)	G3	POP/SIM	ALL STAFF
253D	DIV SITREP	G3	POP	ALL LIVE STAFF
254	NUC WARNING ORDER	G3	POP/SIM	ALL STAFF
255	AD WARNING	G3	POP/SIM	ALL STAFF
257D	OP PLAN	G3	POP	ALL LIVE STAFF
258D	OP EST	G3	POP	ALL LIVE STAFF
259	INITIAL EN CONT	G3	POP/SIM	CMD/G2
260	UNIT PROG RPT	G3	POP/SIM	CMD
261	LOSS CONT W/FU	G3	POP/SIM	CMD/FSE
262	EOOB	G3	POP/SIM	G2/FSE
263	REQUEST	G3	POP/SIM	SELECTED STAFF
264	RESPONSE	G3	POP/SIM	SELECTED STAFF
2XX	RETRANSMIT	G3	POP/SIM	SELECTED STAFF

EVENT NO.	EVENT	FROM	MODULE VERSION	TO[1]
280	QUERY[2]	G1/G4	POP/SIM	SELECTED STAFF
282	FRAG ORDER (CSS)[2]	G1/G4	POP/SIM	ALL STAFF
283D	DIV PDS[2]	G1/G4	POP	LIVE CMD
284D	PER LOG RPT[2]	G1/G4	POP	LIVE CMD
285D	PERS REQ[2]	G1/G4	POP	LIVE CMD/G3
287	CSS EST	G1/G4	POP	ALL LIVE STAFF
288D	CSS ANNEX	G1/G4	POP	LIVE G3
289	REQUEST	G1/G4	POP/SIM	SELECTED STAFF
290	RESPONSE	G1/G4	POP/SIM	SELECTED STAFF
2XX	RETRANSMIT	G1/G4	POP/SIM	SELECTED STAFF

[1]Selected Staff or All Staff includes the commander, if appropriate.

[2]These messages are represented by Class 3 events and are distributed to the staff for information

[3]These messages are only produced if required by a populated G3 module.

DESIGN NOTE H

GENERAL DISCUSSION OF CLASS 5 EVENTS WITH SPECIAL EMPHASIS ON INTELLIGENCE FUNCTIONS

H.1 INTRODUCTION

Class 5 events represent all significant occurrences taking place in the interior modules of the simulation. These events include not only the actual maneuvers, engagements, and intelligence collection activities by units of the opposing forces but also all follow-on events to Class 3 staff outputs and progenitors for Class 4 staff inputs.

The former type events--unit maneuvers, combat engagements, target detections, electronic warfare, intelligence collection and processing--are called "battle-related" Class 5 events. These events have no direct relationship with the separately defined tactical information messages described in Design Notes A thru G and, therefore, do not conform to the rule about embedded message reference numbers used in Section 4.1. Class 5 events of this type are instead assigned numbers that fall into the unused spaces in the range 500-599.

The progenitors and follow-on events, on the other hand, are associated with specific tactical messages and are called "report-related" Class 5 events. These events do conform to the embedded reference number rule even though they are not themselves interface events. Such report-related Class 5 events exist for all defined tactical messages except those dealing solely with staff coordination exchanges.

The event numbers and definitions of the Class 5 events identified to date are shown in Table H-1. The table specifies 12 battle-related events and 61 report-related events. The battle-related events are marked with asterisks. As additional events of this type are defined, they will be inserted in the unused spaces in the table.

This Design Note presents a general discussion of Class 5 events with special emphasis on the intelligence functions that will be simulated as part of the division-level combat. Since these Class 5 events follow from the relationship between the ground truth facts carried in the Real World Data Base and the perceptions stored in the Blue or Red Perceived Data Bases, the discussion will begin by showing the proposed structure and organization of a computer file combining the principal data groups of these three data bases. Within this framework, the battle-related Class 5 events that affect the ENSIT data are identified, and the method of simulating intelligence collection/processing functions is explained. The discussion will then turn to the report-related Class 5 events and show how the

Table H-1. Class 5 Events.

Event Number	Definition of Event
Battle Events	
500*	Battlefield clock indicates it is time to initiate ordered action.
501	Addressee receives Query from Command Group.
502	Corps receives Nuclear Release Request.
503*	Unit(s) begin moving.
504*	Unit(s) cross phase line or check point.
505*	Unit(s) close at destination.
508*	Engagement Phase nn; Battle Array nnn.
510	Addressee receives Query from FSE.
511	Corps receives Query on its Frag Order (FS).
512	Addressee receives Frag Order (FS).
513	Corps receives Immediate Request for Fire Support.
514	Corps receives Preplanned Request for Fire Support.
515	Preparation of Arty Sitrep.
516	Preparation of Arty Target List.
517	Preparation of Friendly Unit Fire Support Capability.
518	Preparation of Enemy Unit Fire Support Capability.
519*	Enemy target attacked by conventional weapons.
520*	Enemy target attacked by nuclear weapon.
523	Preparation of Immediate Request FS.
524	Preparation of Preplanned Request FS.
525	Preparation of Target Report (Intel).
526	Preparation of Fire Support Status Report.
528	Preparation of Fire Support Estimate/Annex.
529	Corps xmits Frag Order (FS).
530	Addressee receives Query from G2.
531	Corps receives Query on its Frag Order (Intel).
532	Addressee receives Frag Order (Intel).
533	Corps receives Division Intsum.
534	Preparation of NBC Report or Corps receipt thereof.
535	Preparation of Weather Forecast.
536*	Friendly unit(s) attacked by conventional weapons.
537*	Friendly unit(s) attacked by nuclear weapon.
538*	Assessment of damage from conventional weapons.
539*	Assessment of damage from nuclear weapons.
540*	Intelligence Received.
541	Preparation of Bde Intsum.

*Event number contains no embedded message reference number.

Table H-1. Class 5 Events (Continued).

Event Number	Definition of Event
Battle Events - continued	
542	Preparation of Shell Report.
543	Preparation of Spot Report.
544	Preparation of Combat Intelligence Report.
545	Preparation of Post Strike Damage Report.
546	Preparation of Estimate of Enemy Strength.
547	Preparation of Target List (Intel).
549	Corps xmits Frag Order (Intel).
550	Addressee receives Query from G3.
551	Corps receives Query on its Frag Order (OPS).
552	Addressee receives Frag Order (OPS).
553	Corps receives Division Sitrep.
554	Addressee receives Nuclear Warning Order.
555	Addressee receives Air Defense Warning Order.
556	Corps receives Request for Reserves.
557	Corps receives Operations Plan.
559	Preparation of Initial Enemy Contact Report.
560	Preparation of Unit Progress Report.
561	Preparation of Loss-of-Contact/Friendly Unit Report.
562	Preparation of Enemy Electronic Order of Battle.
565	Preparation of Bde/Bn Sitrep.
566	Preparation of Air Defense Alert.
567	Preparation of Organic Aviation Sortie Status Report.
571	Corps xmits Frag Order (OPS).
572	Preparation of Operations Special Estimate/Annex.
580	Addressee receives Query from G1/G4.
581	Corps receives Query on its Frag Order (CSS).
582	Addressee receives Frag Order (CSS).
583	Corps receives Division Personnel Daily Summary.

Table H-1. Class 5 Events (Continued).

Event Number	Definition of Event
Battle Events - continued	
584	Corps receives Periodic Logistics Report.
585	Corps receives Personnel Requisition.
586	Preparation of Immed. Req. for Logistic Support or Corps receipt.
591	Preparation of Bde/Bn Personnel Daily Summary.
592	Preparation of CAPE Report.
593	Preparation of Preplanned Request for Logistic Support.
595	Corps xmits Frag Order (CSS).
596	Preparation of DisCom Sitrep or Corps receipt thereof.
597	Preparation of CMO Estimate/Annex.

intelligence staff inputs (Class 4) will be generated by processing the real world data by means of the state-of-knowledge indices from the ENSIT table and then aggregating the intelligence data according to the report format requirements.

This Design Note is intended to provide a perspective on the manner in which the intelligence functions will be simulated. The reviewer should bear in mind that the full range of battle-related Class 5 events having no relationship to intelligence are not fully defined nor are the report-related Class 5 events bearing on FRENSIT tables full developed.

H.2 STRUCTURE OF THE COMBINED DATA BASE

The basic design concept of the integrated battle simulation specified three distinct data bases: the Real World Data Base, the Blue Perceived Data Base, and the Red Perceived Data Base. The Real World Data Base contains the simulation status variables for each company-sized unit in both the Blue and Red forces; the perceived data bases each contain Enemy Situation (ENSIT) and Friendly Situation (FRENSIT) data tables representative of the state of knowledge the Blue or Red side holds about the enemy situation and about its own forces (see Section 4.1.3). These data bases are further defined and partitioned as follows:

- Real World Data Base
  - Reference Table
  - Real World Unit Type Table
  - Battle Array File
  - Real World Status Data
- Blue Perceived Data Base
  - Enemy Situation File
  - Friendly Situation File
- Red Perceived Data Base
  - Enemy Situation File
  - Friendly Situation File

With the one exception of the Reference Table, which will be located in core memory, all of the above files will be located in direct-access memory. Table H-2 specifies the entries required in the Reference Table for each of the allowable 300 units of the simulation. The Reference Table contains all search variables (by any entry) whereby access is gained to those files located in direct-access memory. Those entries that are invariant once the play of the game has commenced are indicated by an I while those variable entries are indicated by a V. The field size is specified for each entry in the Reference Table, thus

implying that 7200 bytes or characters are required for the 300 units in the Reference Table.

Table H-2. Core Reference Table.

ENTRY	CHANGEABLE	FIELD SIZE	ACCUMULATIVE
Unit Identification	I	10	10
Unit Type Index	I	2	12
Current Task Organization	V	2	14
Current Location	V	8	22
Battle Array Index	V	2	24

The Real World Unit-Type Table consists of those standard data which must be specified for each unit (Red and Blue) within the simulation. Up to 25 unit type entries may be listed for each opposing force. Unit type tables for different type units are expected to reflect a great deal of commanlity, however, there will also be differences to reflect their unique missions, weapons, and equipments.

- Authorized strength
- Weapon quantity and types
- Weapon ammunition expenditure rate
- Ammunition basic load (by weapon type/activity)
- Equipment quantity and types
- POL basic load
- POL expenditure rate (by equipment type/activity)
- Firepower coefficients
- Units communicability index

It is estimated that each unit type entry will require 120 bytes, making the total requirements for the subtable 3000 bytes.

The Battle Array File will contain arrays of data identifying specific maneuver units and combat support units on each side during the time the opposing forces are engaged in active combat. Separate arrays will exist for different battles taking place in different locations in the tactical area of play. An individual battle array will be created whenever, during the play of the game, Blue units and opposing Red units first make contact. The array data will remain on file until the engagement is resolved and the opposing forces have broken off contact. In addition to the units in contact, current firepower scores, unit center of mass, and other like variables will be maintained in this file for ready access.

For the initial implementation of the design concept, it is proposed that the remaining data bases be combined into a single direct-access computer disk file keyed by a unit index. The structure of this file is shown in Figure H-1.

The file will consist of 300 records of approximately 300 bytes or characters each. The records will be keyed by a unit index varying between 1 and 300. Unit indeces 1 to 150 will cover the company-sized units of the Blue force; the indices 151 to 300 the Red force. Each record will contain approximately 200 bytes of real world status information plus 50 bytes each for the FRENSIT data and ENSIT data associated with the unit. In the sample entries shown in the figure, record 53 will contain the status, location, etc., of the 53rd Blue unit as well as the Blue and Red perceptions of the same unit. Similarly, record 195 will contain the corresponding groups of information for the 45th Red unit in the war game. The tabular array of data heretofore identified as the Blue Perceived Data Base is now more fully defined as the FRENSIT information over the first 150 records and the ENSIT data in the last 150 records. It is shown by the shaded boxes. The Red Perceived Data Base is simply the remaining unshaded portion on the right.

It can been seen by comparing the relative sizes of the real world status variables and the FRENSIT or ENSIT data that the state of knowledge materiel is stored by the use of special coded variables and is not simply a biased or degraded version of the same data on the left. The special variables will consist of perceived status indicators, state-of-knowledge indices, and reporting time parameters. A state-of-knowledge (SOK) index will be a one-digit integer whose value will be a quantitative measure of the current state of knowledge about an item of friendly or enemy force information. The reporting time parameters will be simply the recorded date-time-groups when the statement-of-knowledge indices were last updated by means of intelligence processing events. The special codes will provide the basis for a compressed data storage format as well as for the algorithms which will govern the biasing or degrading of the tactical information held by the two sides.

The algorithms or routines controlling the SOKs will be rooted to a set of internal tables relating the SOK values to the amount or interpretation of the error by which the perceived facts depart from the real facts. There will be a separate table for each identified item of friendly or enemy force information. For example, there will be a location SOK table showing the range of probable location errors ascribed to each of the ten values of the location SOK index. By reference to these tables, the routines will be able to generate or change aspects of the state of knowledge held by the Blue or Red sides.

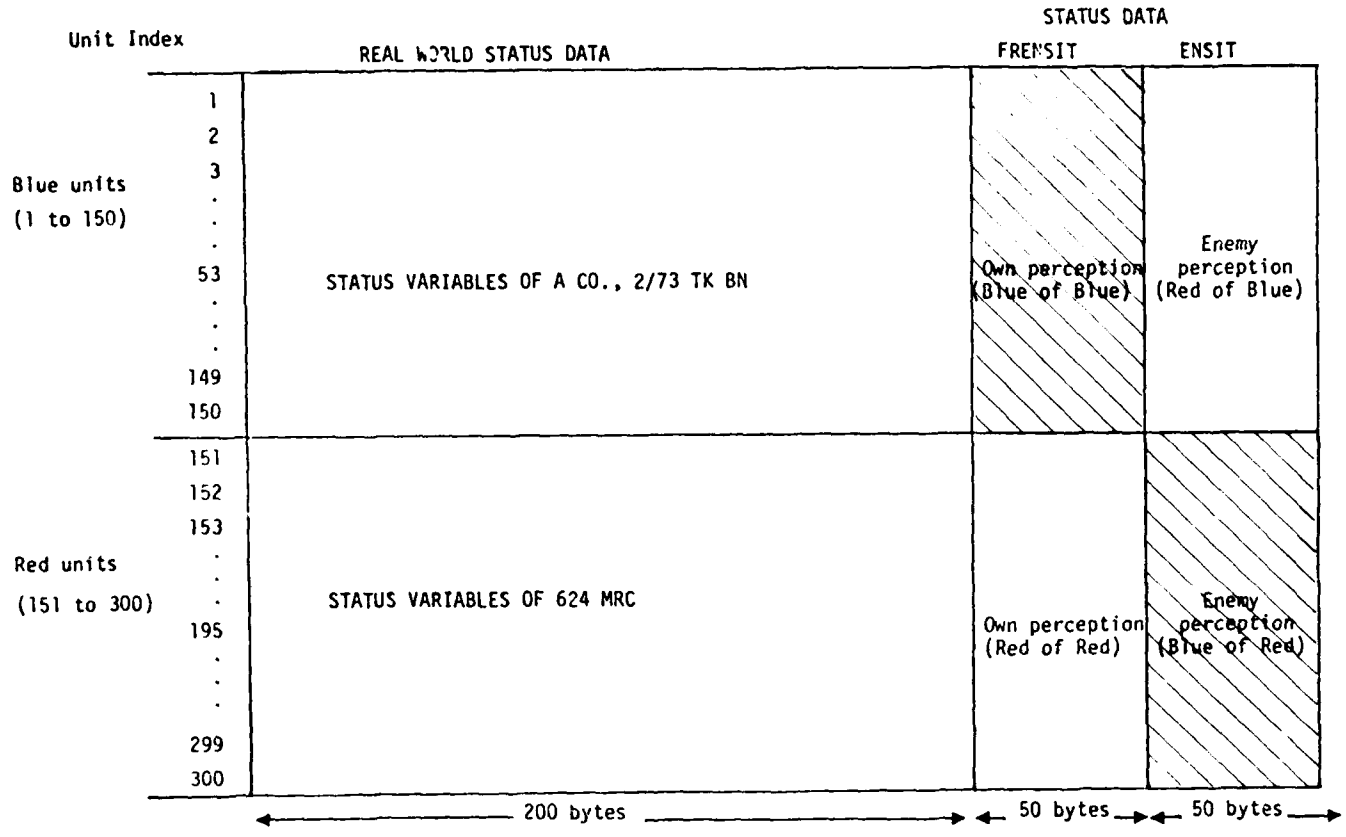


Figure H-1. Structure of File Combining Principal Data Groups of the Three Data Bases.

H.2.1 Real World Status Data

Nearly all Class 5 events, whether battle-related or report-related, will refer to, or be associated with, one or more units of the Blue and/or Red forces. Exceptions are those miscellaneous events associated with the weather, sunrise/sunset, terrain-oriented targets, etc. Generally, battle-related events will cause changes in the Real World Status Data and the ENSIT files of the opposing forces, and report-related events will (1) cause changes in the FRENSIT files, (2) maintain cognizance of times associated with the preparation and transmission of reports and, in some instances, (3) also cause changes in the Real World Status Data.

As mentioned previously, the Real World Status Data for each unit will be contained in the first 200 bytes of the record associated with that unit in the combined file of Figure H-1. Table H-3 contains a preliminary list of these status variables and their required field sizes for a Blue mechanized infantry company. This list will be refined as the model is developed and similar lists will be prepared for each Blue and Red unit type. It should be noted that although the list of status variables will be the same for a particular type unit, the data values for these variables will, in all likelihood, be different for each specific unit.

An analysis of the Real World Status Data for the Blue mechanized infantry company reveals the following information:

- To date, there are 55 status variables and 15 status flags assigned, of which
  - Fifteen variables have been identified to record the three primary weapons assigned and the current available ammunition.
  - Fourteen variables have been identified to record the current posture, activity, missions, communicability, and location.
  - Thirteen variables have been identified to record the four primary vehicles assigned and POL.
  - Eight variables have been identified to record the task organization and current personnel assets.
  - Five variables have been identified to record report submission times.
- There are 34 spare bytes which may be used to store additional variables which might be required.
- That with the one exception of one future mission and its associated time all status variables reflect current information.

Table H-3. Real World Status Data for a Mechanized Infantry Company

STATUS VARIABLE	FIELD SIZE	ACCUMULATIVE
Status Flags (15 to be specified)	2	2
Current Posture	2	4
Current Activity	2	6
Current Communicability	2	8
Current Primary Mission	2	10
Current Intelligence Mission	2	12
Next Primary Mission	2	14
Current Movement Rate	2	16
Current Direction of Movement	2	18
Right Adjacent Unit Index	2	20
Left Adjacent Unit Index	2	22
Next Task Organization	2	24
Current Total Personnel Strength	2	26
Personnel Gains Since DTG1	2	28
KIA	2	30
WIA	2	32
MIA	2	34
Weapon Type 1: Operable	2	
Lost/Destroyed	2	
Damaged/Failed	2	
Expected Up Next Period?	2	
Current Ammo Load	2	44
Weapon Type 2: Operable	2	
Lost/Destroyed	2	
Damaged/Failed	2	
Expected Up Next Period	2	
Current Ammo Load	2	54
Weapon Type 3: Operable	2	
Lost/Destroyed	2	
Damaged/Failed	2	
Expected Up Next Period?	2	
Current Ammo Load	2	64
Vehicle Type 1: Operable	2	
Lost/Destroyed	2	
Damaged/Failed	2	
Expected Up Next Period?	2	72
Vehicle Type 2: Operable	2	
Lost/Destroyed	2	
Damaged/Failed	2	
Expected Up Next Period?	2	80
Vehicle Type 3: Operable	2	
Lost/Destroyed	2	
Damaged/Failed	2	
Expected Up Next Period?	2	88

Table H-3. Real World Status Data for a Mechanized Infantry Company (Continued).

STATUS VARIABLE	FIELD SIZE	ACCUMULATIVE
Vehicle Type 4: Operable	2	
Lost/Destroyed	2	
Damaged/Failed	2	
Expected Up Next Period?	2	96
Current Qty POL	2	98
DTG1 Last Personnel Daily Summary	4	102
DTG2 Last SITREP	4	106
DTG3 Next Mission/Task Org Change	4	110
DTG4 Expctd Phse Line/Chk Pt/Closing	4	114
DTG5 Last CAPE	4	118
Next Location	8	126
Center of Mass Location	8	134
PT1 of Contact	8	142
PT2 of Contact	8	150
PT3 of Contact	8	158
PT4 of Contact	8	166

- That the Real World Status Data reflects current data required by senior echelons of each subordinate unit to command and control combat assets.

The status variables for each unit within the Real World Status Data will be updated as a result of a battle-related event or a report-related event. Prior to an engagement, battle-related events 500, 503, 504, and 505 and other events yet to be defined will cause updates to associated status variables upon the occurrence of that event. There will be a validity check on certain events to ensure that they have indeed occurred. For example, if an event initiated the movement of a maneuver company from checkpoint A to checkpoint B, a search algorithm within the event processing would ensure that any event intervening with the unit prior to the arrival event would cause the arrival event to be invalid. This check would be accomplished prior to the unit's arrival at checkpoint B being posted. This mechanism is referred to as the "not-really" property within the event-store simulation.

An engagement event 508 will cause, inter alia, updates to associated status variables for those units that suffer personnel and materiel losses at the end of each 15 minute phase of the engagement. Battle-related events 519, 520, 536, and 537 will cause updates to the associated status variables upon their occurrence. The "not really" mechanism will be used to validate the occurrence of these events. Battle-related events 538, 539, and 540 do not cause changes to any field within the Real World Status Data but do operate on the ENSIT file as will be explained in paragraph H.3.2. There are six report-related events, defined to date, which cause updates or changes to unit status variables within the Real World Status Data. There are events 512, 532, 552, 554, 555, and 582. These Class 5 events represent the receipt of various frag and warning orders by specific units within the BOG. Frag orders may indicate a change in a unit's mission/task organization or it may indicate replacements or replenishment. Appropriate status variables will be changed upon receipt. Warning orders may result in a unit's posture or activity being degraded and, as before, appropriate status variables will be changed upon receipt.

H.2.2 Perceived Status Data

As mentioned previously, the Perceived Status Data is organized within the last 100 bytes of the individual records presented in Figure H-1. The Blue Perceived Data Base, i.e., the Blue perception of its own and the opposing forces, consists of the union of FRENSIT information over the first 150 records and the ENSIT information in the last 150 records. Conversely, the Red Perceived Data Base consists of the union of ENSIT information over the first 150 records and the FRENSIT information in the last 150 records.

The FRENSIT record for each unit will consist of a set of SOK indices which delineate the unit's combat effectiveness and a set of perceived status flags. The SOK indices and perceived status flags, although not fully developed, are not expected to differ significantly between each type unit. For example, SOK indices have been defined for the following variables representing a mechanized infantry company: vehicles, POL, weapons, ammunition, personnel, and location. All of the real world status data concerning vehicles in Table H-3 will be reflected by a single SOK index. Accordingly, a SOK value of nine would signify that the division staff has current and accurate knowledge of the four type vehicles contained within the company (to include number and type vehicles, damage received, status of repair, etc.), while a SOK values of zero would signify that the division staff has no knowledge about the company's vehicles. This latter value would ordinarily not happen for a friendly force and is only presented to indicate the extreme case. Similar logic can be used to describe fully each variable for which a SOK index has been defined. It is apparent that these variables could be readily extended to reflect other type units although it is expected that separate SOK indices will be defined for support and headquarter units. A cursory inspection reveals that they are applicable to artillery and air defense artillery units as well. It should be noted that the real world status data for these different units will differ significantly and the SOK indices only reflect the perceived knowledge about each category.

The ENSIT record for each unit will also consist of a set of SOK indices and a set of perceived status flags. These indices and flag variables are not yet fully developed, but are expected to cover intelligence information categories about the unit which are pertinent to the intelligence collect and processing used by the Blue and Red sides. One category, for example, will be related to the size of the enemy unit - is the unit as isolated body no larger than company size? Is it part of a battalion-sized force or even a brigade or regiment? A SOK value of nine in this category would signify that the size of the enemy force had been reliably and accurately determined, while a SOK value of zero would mean that the sensor detection had provided no clue whatsoever about the size of the enemy unit. Similar logic can be used in other categories of ENSIT information.

H.3 CLASS 5 EVENTS INVOLVING INTELLIGENCE COLLECTION AND PROCESSING

For the purposes of simulating the intelligence collection and processing on the opposing sides, the ENSIT data in the perceived data bases will be controlled and updated by computer logic which will always divide incoming intelligence information into the two categories: "contact intelligence" and "sensor detections."

Contact intelligence is defined as the development of intelligence about the opposing side by forces directly engaged in combat (e.g., maneuver brigades, battalions, or any grouping of units contained in a battle array). The influx of contact intelligence will be handled by logic within the routines of event No. 508 (basic engagement event). The collection and processing of intelligence about the opposing side will otherwise not be explicitly simulated, but instead will be governed by an algorithm which updates the ENSIT data for all enemy units contained in the battle array. This is described below in Paragraph H.3.1.

Sensor detections, on the other hand, are defined as all other incoming intelligence information. Sensor detections will be explicitly simulated as stemming from the following sources:

- Flank guard elements
- Forward observers
- Special intelligence sources
- UGSs
- RPVs
- Air reconnaissance
- Agents/LRRPs
- SOTAS
- GSR
- Counter Battery Radars
- POW/Humint
- Reconn patrols
- Air cavalry elements

The defined battle-related Class 5 events in which these explicit detections will take place have not yet been identified. Some detections will occur within the logical framework of events already defined; others will require separate, new event definitions. The flank guard detection (item 1, above), for example, will be based on detection logic contained in Events Nos. 503, 504, and 505, and will be based on the geographic proximity of the enemy unit(s) to the moving column.

Sensor detections will always be associated with discrete time occurrences and will involve one or more units of the opposing side. Such detections will always trigger Events No. 450, which will simulate the processing of received intelligence. This event is described below in paragraph H.3.2.

The basic simulation rule to be used in Event No. 540 is that all sensor detections involving units already in contact will be ignored. Even though sensor detections may arise involving enemy unit(s) that are included in a battle array, the logical structure of Event No. 540 will ignore the detection whenever it has been determined that the unit(s) are engaged. In this manner the model will generate contact intelligence about all opposing units being engaged and sensor detections about opposing units not in active combat.

H.3.1 Contact Intelligence

The development of intelligence about opposing units that are engaged in combat will be based on the assumption that units in combat learn more about the enemy the longer they are engaged. Accordingly, the collection and processing of contact intelligence will be simulated by logic contained in Event No. 508 (the basic engagement event). The logic will provide for the updating of the SOK indices and status flags in the ENSIT records of all units identified as being in the battle array of the engagement. The SOK values in all categories of ENSIT data - covering the Blue perceptions of Red units and the Red perceptions of Blue units - will be governed by the amount of time (actually the number of 15-minute engagement phases) the individual units have been in the battle array. At the moment an individual unit first joins the battle array, the SOK values in its ENSIT record will be set according to an internally-stored schedule of "first contact" perceptions. Thereafter, the values will increase as a function of the number of phases of the engagement that have elapsed. In this manner, the updating of the ENSIT data for the involved units will be the sole mechanism for contact intelligence. No explicit events other than the basic engagement event will be involved.

Contact intelligence (as well as processes sensor detections) will be reported to the Division Staff through the event-triggered Class 4 messages No. 459 (Initial Enemy Contact) and No. 460 (Unit Progress Report) as well as through the time/query-triggered messages No. 465 (Bde/Bn Situation Report) and No. 441 (Bde Intelligence Summary). The corresponding report-related Class 5 progenitor events are Nos. 559, 560, 565, and 541. The first two will be triggered by the basic engagement event; the last two will be triggered according to the reporting time SOP. It should be noted that the first three staff inputs are sent to the G3 and only the last one to G2. But all reports contain intelligence about enemy units stemming in part from the contact intelligence mechanism. The reports will be generated (at progenitor event time) by routines like that described on page H-9, thereby varying the states of knowledge held by the addressees according to the SOK values in the ENSIT records.

H.3.2 Sensor Detections

As stated previously, sensor detections differ from contact intelligence in that the former will always involve explicit simulated events associated with the detection and processing of intelligence about enemy units. Where as contact intelligence is garnered only for opposing units actively engaged and only during periods of time when the units are in actual contact, sensor detections represent the continuous influx of intelligence from various battlefield sensor systems.

All sensor detections trigger the battle-related Class 5 event No. 540 (Intelligence Received Event). The distinction between contact intelligence and sensor detections becomes important on the model because ENSIT records in the perceived data bases should not be subjected simultaneously to the contact intelligence mechanism described above and the sensor detection logic of Event No. 540. Accordingly, the logic of the intelligence received event will always discard all detections if they refer to units that are already in contact. This will provide assurance that individual ENSIT records will be updated either by the contact intelligence mechanism or as a result of the receipt of a sensor detection, but never both simultaneously.

The event thread chart for Event No. 540 is shown in Figure H-2 as well as in Chart No. 140 in Design Note J. The defined battle-related Class 5 events that trigger Event No. 540 have not yet been identified, but they will consist of the following five different kinds of detections or intelligence sources, as shown in the chart:

- Detection by in-place sensors
- Detection by cued sensors
- Intelligence from an unimpeachable source
- Detection by agents/LRRPs
- Assessment of damage from conventional or nuclear weapons. (Events No. 538 and 539).

The follow-on events from Event No. 540 depend on the nature and the resulting SOK values emerging from the intelligence received. One or more of the following six events could be triggered by the receipt of a sensor detection:

- Event No. 519 Enemy Target Attacked
- Event No. 525 Preparation of Target (Intelligence) - to be sent to FSE.
- Event No. 543 Preparation of Intelligence Spot Report - to be sent to G2.

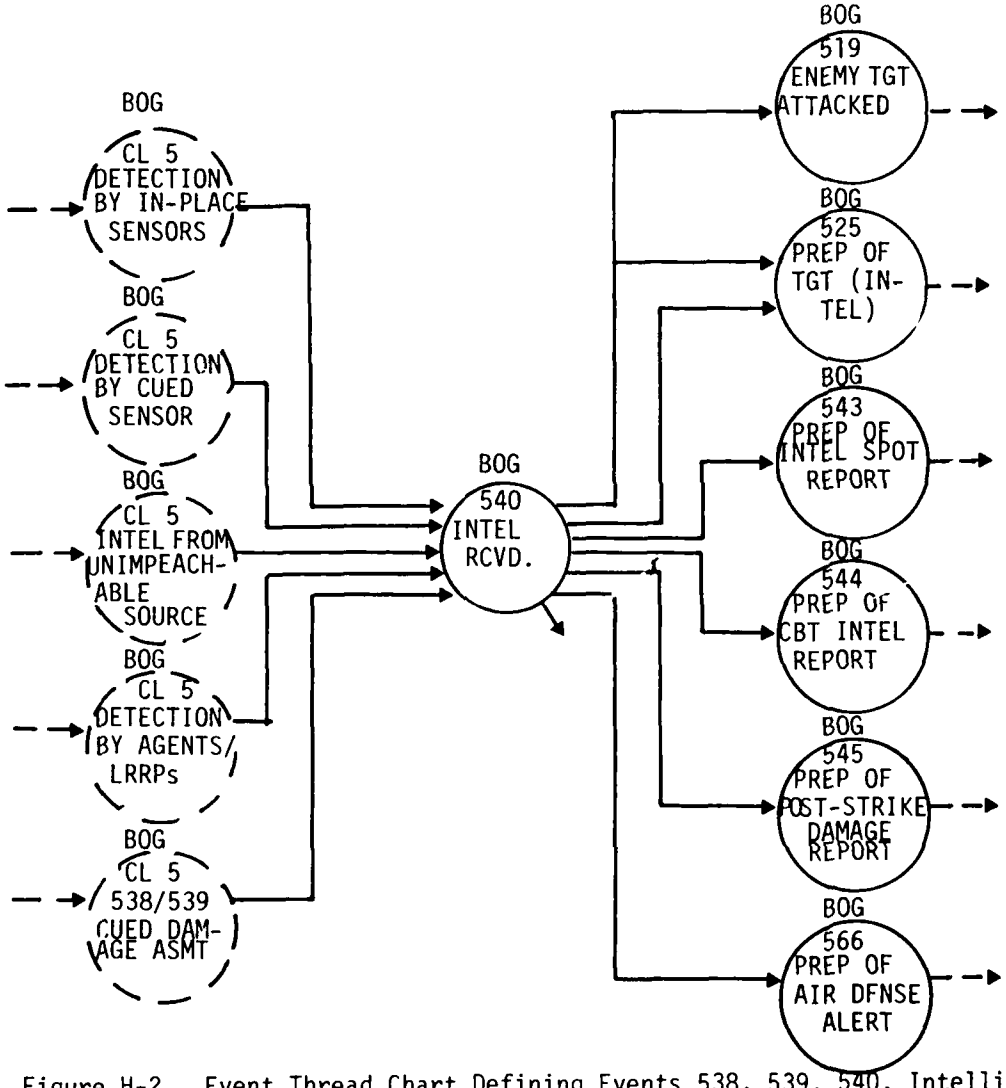


Figure H-2. Event Thread Chart Defining Events 538, 539, 540, Intelligence Received Event.

- Event No. 544 Preparation of Combat Intelligence Report - to be sent to G2.
- Event No. 545 Preparation of Post Strike Damage Report - to be sent to G2.
- Event No. 566 Preparation of Air Defense Alert - to be sent to G3.

It should be noted that the agency or unit in the BOG that receives and processes the sensor detection may be ASAC, DIVARTY, or the ADA Bn, or the Red equivalents. The first and second follow-on events above arise because the acquisition and attack of enemy targets by means of G2 artillery or other attack modes is an important part of the general intelligence gathering process, one which ordinarily will not involve the Division Staff. Similarly, the last follow-on event will arise when the ADA sensors detect imminent air attack by the opposing force.

All sensor detections triggering Event No. 540 will make reference to one or more specific enemy unit entries on the combined data base. The basic logic of the event will be as follows:

- If the enemy units are already in contact, discard the detection.
- Update the ENSIT records of the units involved. If the state of knowledge about the units has not improved (i.e., SOK values have not increased), update only the time of detection.
- Test the ENSIT records of the units to see if this represents a newly detected target for the general target list (Intelligence). If so, trigger Event No. 525 and then execute attack decision logic to determine if target for G2 fires. If so, trigger Event No. 519.
- Test the ENSIT records of the units to see if an Intel Spot Report is warranted. If so, trigger Event No. 543.
- Test the ENSIT records of the units to see if a Combat Intel Report is warranted. If so, trigger Event No. 544.
- If the sensor detection stems from cued damage assessment events, trigger Event 545.
- If the sensor detection stems from ADA sensors, trigger Event No. 566.

As a consequence of this logic, the ENSIT records of all units not in contact will reflect the growth of the state of knowledge held by the opposing sides. All unit entries will be flagged if they have become target list (Intelligence) entries; all unit entries will be

flagged if they have become target list (artillery) entries. The flag variables and SOK values held in the ENSIT records provide the basis for time/query-triggered reports to the Division Staff such as the following:

- Event No. 516 Preparation of Target List (Arty) to be sent to FSE.
- Event No. 541 Preparation of Bde Intelligence Summary to be sent to G2.
- Event No. 546 Preparation of Estimates of Enemy Strength to be sent to G2.
- Event No. 547 Preparation of Full Target List (Intel) to be sent to G2.
- Event No. 562 Preparation of Enemy Electronic Order of Battle - to be sent to G3.
- Event No. 565 Preparation of the Bde/Bn Situation Report to be sent to G3.

It should be made clear that these reports have not direct event thread relationship with Event No. 540, but that they do access the ENSIT records of the perceived data bases which will be continually modified and updated by means of Event No. 540 as well as of the basic engagement Event No. 508.

DESIGN NOTE I

GENERAL DISCUSSION OF CLASS 1 EVENTS AND CORRESPONDING STAFF ACTION PROCEDURES USED IN LIVE MODULES

I.1 INTRODUCTION

Class 1 events represent the action-handling steps performed by a staff section in completing a required staff action. Class 1 events have meaning only for those staff sections that are simulated modules. As stated in paragraph 4.1.2.1, staff actions executed by populated modules will be acknowledged by the model only through the interface events (staff outputs) stemming from the actions; the simulator will not record the occurrence of individual action steps nor measure how well the players conform to the correct action procedures. Such measures of player performance will be handled under the live staff instrumentation techniques discussed in Section 5.2.2. The results of faulty procedures, if any, carried out by human players will be reflected only by adverse battle outcomes or by corrective coordination exchanges coming from other staff sections.

Under most configurations of play, some staff modules will be simulated and others will be populated with human players. In the simulated modules, the action steps in each staff action will consist of, and be represented by, a thread of Class 1 events. The number of simulated action steps between the trigger and the terminator(s) will depend on the individual action SOPs and on the level of procedural detail used in the various actions.

In accordance with the event numbering convention adopted for the model, Class 1 events are numbered from 100 to 199. The event numbers and definitions of the Class 1 triggers and terminators for all staff actions are shown in Table I-1. It can be seen in the table that the triggers consist of Event Nos. 100 through 112 and the terminators are Event Nos. 189 through 199, but that intermediate action steps have not yet been defined.

It should be noted, furthermore, that Class 1 events have no direct relationship with individual tactical information messages. Their event numbers do not conform in any way to the rule of embedded message numbers.

This design note addresses the Class 1 action steps not yet defined as well as the corresponding staff action procedures to be developed for human players in live modules. These aspects of the basic design have given rise to two fundamental design problems sufficiently critical to warrant additional design effort. The problems may be stated as follows:

Table I-1. Class 1 Events.

Event Number	Definition of the Event
Internal Triggers	
100	Clock indicates that is is time to initiate staff action.
101	Receives a tactical information message from BOG or higher HQ.
102	Receives a retransmitted copy of input to another section.
103	Receives an info copy of output by another section.
104	Receives a query from another section.
105	Receives a request for concurrence[2] from another section.
106	Receives a request for consideration[3] from another section.
107	Receives a concurring response to a request for concurrence.
108	Receives a non-concurring response to a request for concurrence.
109	Receives an info copy of a request frag order.
110	Receives a non-concurring response to a request for consideration.
111	Receives a response to its query to another section.
112	Receives information from another section.
Action Steps	
	(Not yet defined.)
Terminators	
189	Sends to selected staff elements.
190	Issues frag order or warning order.
191	Initiates query[1]
192	Initiates a request for concurrence[2].
193	Initiates a request for consideration[3].
194	Initiates a report for higher headquarters.
195	Aggregates its information on file for a response.
196	Issues a concurring response to a request for concurrence.
197	Issues a non-concurring response to a request for concurrence.
198	Issues a non-concurring response to a request.
199	Retransmits copies of its input.

[1] For all staff modules except Blue CG, queries will be automatically separated into staff queries or queries to subordinate units. The Blue CG module will have the selectable option between staff queries or queries to subordinate units.

[2] A request for concurrence is based on a frag order under initiator's purview.

[3] A request for consideration is based on a frag order under recipient's purview.

- How can the logic of the Class 1 action steps be made to reflect simulated staff actions in simulated modules in response to variations in the way human players in populated modules carry out their staff procedures?
- How should the staff procedures prescribed for live modules be written so that they emphasize the research objectives of the investigators and at the same time play down the more routine aspects of the staff actions?

The design note begins by outlining the general method to be used in identifying the elementary operations involved in the action steps and in finding those Class 1 events which must invoke command and control decision logic or else controller intervention. The discussion continues by showing that the first design problem above arises because the simulated staff modules, as well as the battle outcome generator, must reflect the results of faulty actions performed by the teams of players in live modules. The second design problem is then explained. The model must allow the investigators/controller(s) to inject altered or faulty staff actions in simulated staff modules in order that they may observe in the live module responses reflecting particular research objectives. The annex concludes with a recommended program for completing the design effort.

I.2 THE CONCEPT OF CLASS 1 EVENT THREADS

The general method to be used in formulating the remaining Class 1 events (and the corresponding staff action procedures for live modules) is outlined here by developing and illustrating the basic event threads and procedures for two different tactical information input messages. The examples, covering the staff processing of two separate staff inputs by different staff sections, are as follows:

- G2 processing of an incoming Intelligence Soot Report (Event No. 443).
- G3 processing of an incoming Brigade/Battalion Situation Report (Event No. 465).

In these examples, as well as in all staff procedures to be used in the model, it should be understood that the Class 1 event threads providing the simulated staff processing parallel the action steps ordinarily performed by a well trained staff module with respect to the decision alternatives addressed and the amount of time taken to complete the action steps. The processing event threads should ordinarily lead to a division staff response that represents the correct decision choice in a reasonable amount of time under the existing circumstances of the tactical picture as seen by staff section and of the workload carried by the section. At the same time the structure of the threads must be sufficiently flexible to accommodate

incorrect responses generated by populated modules or variant responses injected by the investigators/controllers in order to emphasize particular research objectives. The requirement for handling incorrect staff actions performed by live players is developed further in Paragraph I.3.1. The question of the how to specify the action SOPs for players so that the model as a whole will reflect desired objectives in behavioral research is discussed in Paragraph I.3.2.

I.2.1 Intermediate Action Steps

The processing event threads for the two examples should reflect the normal staff procedures executed (1) by the (simulated) Intelligence Staff Section when it receives an Intelligence Spot Report and (2) by the (simulated) Operations Staff Section when it receives a Brigade/Battalion Situation Report. The proposed structure of the G2 processing is shown in Figure I-1; that of the G3 processing is shown in Figure I-2.

It is apparent from the two figures that the two staff inputs will be processed under the same general procedural framework. Both event threads are started or triggered by the Class 1 Event No. 101 - the Receipt of the Tactical Information Message. Both threads may be terminated by one or more of the terminating Class 1 Events Nos. 190, 191, 192, 193, and 199. These events have already been defined in Table I-1 (as well as in Annex J).

The tentative thread charts also contain four intermediate Class 1 events whose event numbers and basic definitions are tentative and not yet fully developed. These are as follows:

- Event No. 120 - Filing and Sitmap Update
- Event No. 130 - External Distribution Routing
- Event No. 170 - Analysis of G2 Alternatives
- Event No. 180 - Anlaysis of G3 Alternatives.

The common procedural framework of the two threads is further reflected by the use in both threads of the first two of these intermediate events. In either procedure, the first action step (Event No. 120) following the receipt of the staff input consists of the section journal entry, the filing of the report copies in various section files, and the posting of tote entries and/or situation map entries, depending on the nature and content of the input message. The second action step (Event No. 130) is the determination of the external routing, if any, for retransmission copies of the staff input. The simulated staff section must make the decision as to what other staff sections--or even higher headquarters--should be sent copies. The logic of this event will trigger Event No. 199 for each addressee selected.

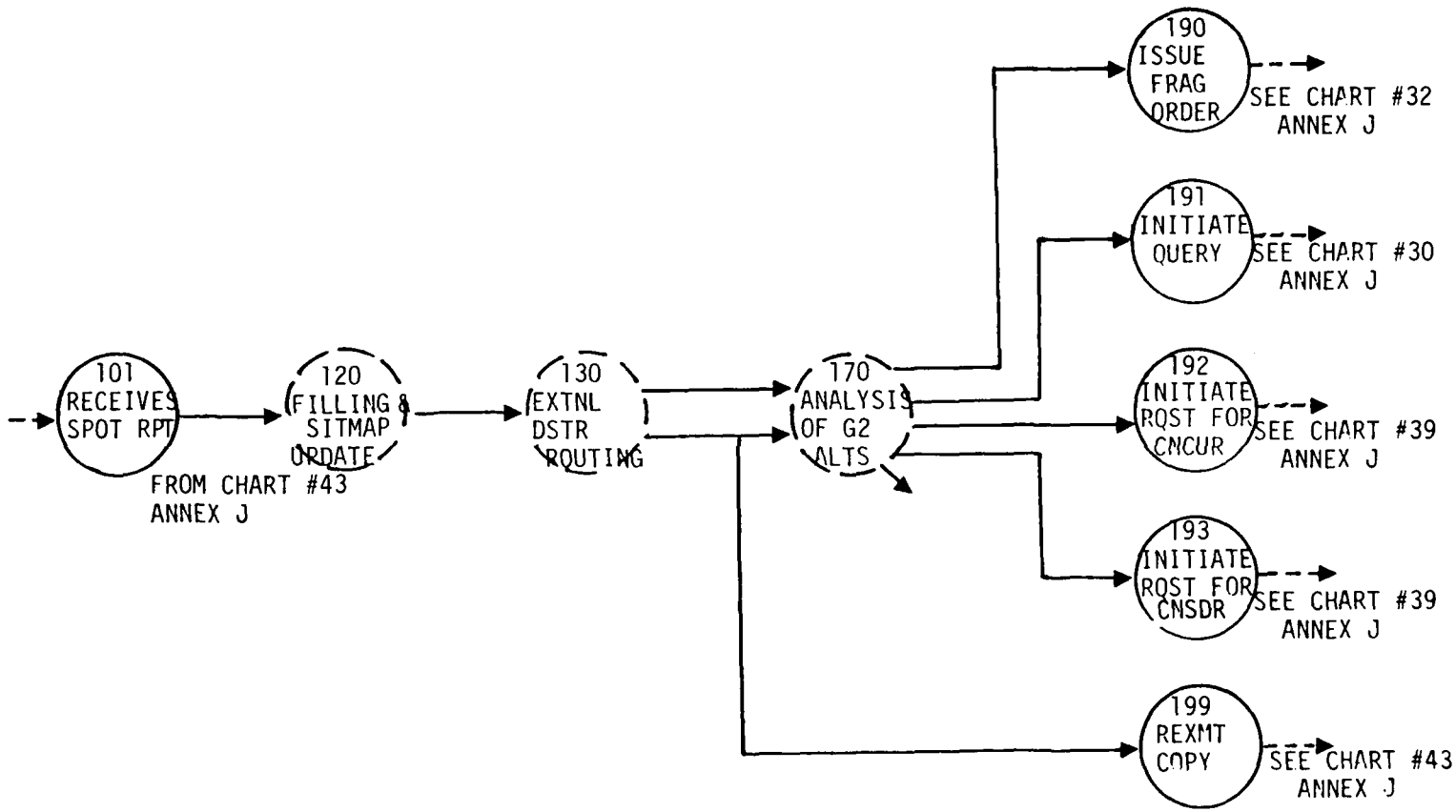


Figure I-1. Tentative Event Thread Chart for G2 Processing of an Incoming Intelligence Spot Report.

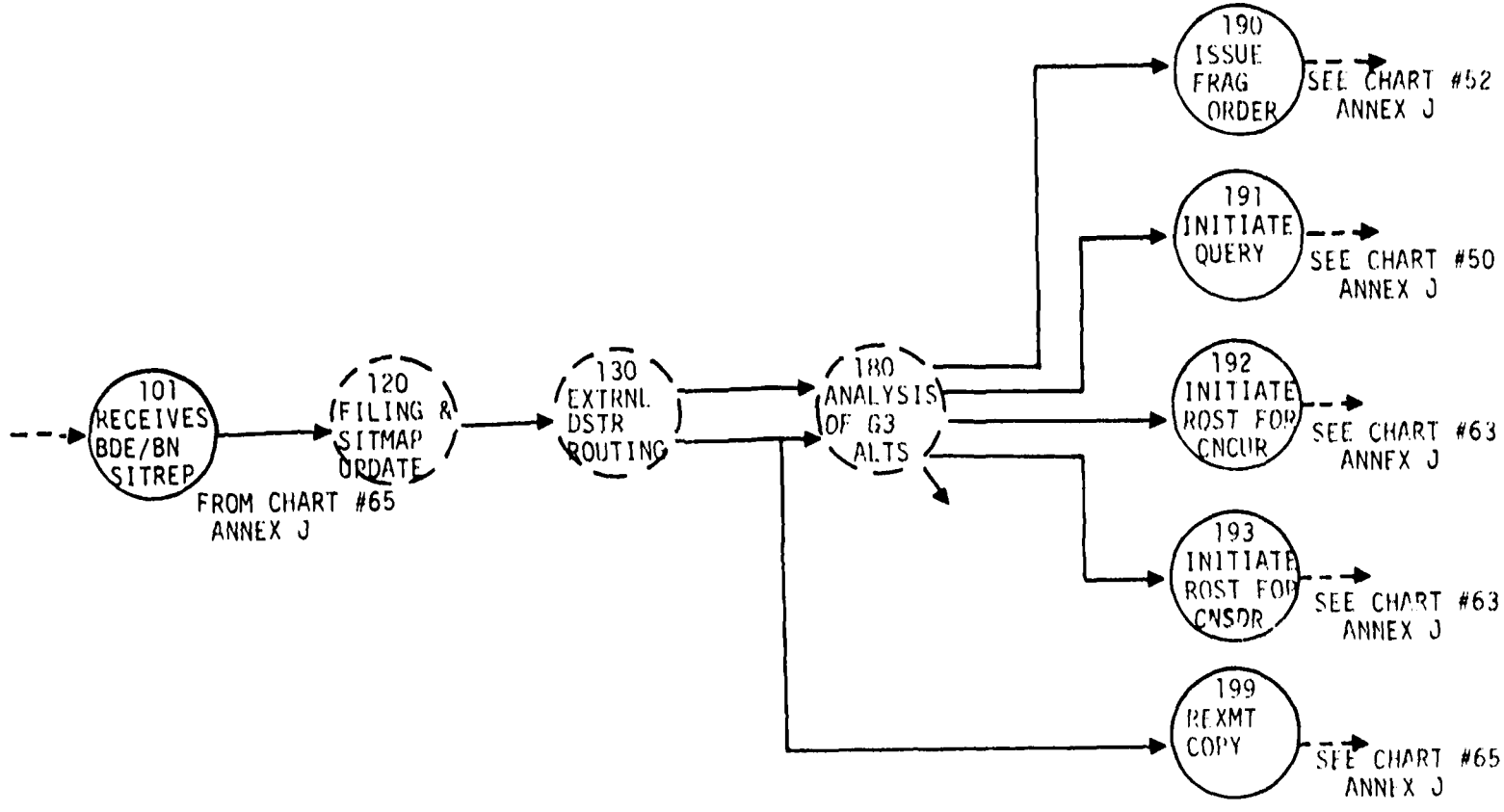


Figure I-2. Tentative Event Thread Chart for G3 Processing of an Incoming Brigade/Battalion Situation Report.

The third action step in the threads (Event No. 170 in Figure I-1 or Event No. 180 in Figure I-2) is the fundamental decision event associated with the staff input. The simulated section must determine what action, if any, is required as the correct response to the input it has received. Is the tactical information content of the report such that no further action is indicated at this time? If action is required, is more definitive information either from other staff elements or from subordinate field units needed before the appropriate frag orders can be written? Is the indicated action of sufficient importance or of such a nature that the Command Group must concur or corps guidance must be requested? Finally, does the required action call for one or more frag orders issued by this staff section or the request for consideration of action by other sections?

It should be made clear about the Class 1 event threads that the simulation of staff action steps will not involve the explicit representation of printed tactical messages, real situation maps, tote board charts, journals, or actual staff materials. The realistic dynamic portrayal of staff processing will be developed in the computer by means of the timing and logic of the Class 1 events. The trigger of the two sample threads (in both cases, Event No. 101), for example, will simulate the receipt of the staff input simply by delaying the onset of the first action step (Event No. 120) for a period of simulated time equivalent to the average time the radio telephone operator (RTO) would take to copy the message. Similarly, the Filing and Sitmap Update step will be simulated by injecting a further delay in simulated time, in this case, a delay which is a function of the type of staff input, the relative size of the changes in the tactical picture it deals with, and the current workload impinging on the staff section.

The subsequent action steps shown in the sample threads involve decision logic. In each thread the simulated section must make certain choices or selections pertinent to the command and control of the division-level combat. The logic in these events will be based on ENSIT and FRENSIT data stored in the perceived data bases because the simulated staff section is presumed to have on file or in staff displays all the relevant tactical information within its purview. While the algorithms for making decision choices have not yet been developed, two basic design principles have been identified for their development. These principles are:

- Simulated decision-making will be based on "decision tables" in which the alternatives will be examined and eliminated in a linear process.
- The algorithms will minimize insofar as possible the instances where controller intervention (release events) will be required.

The terminator events in the sample threads (nos. 190, 191, 192, 193, and 199) will simulate the issuance of frag orders, etc., simply by injecting further delays in simulated time to account for the amount of time the simulated section would take to compose, draft, and transcribe the appropriate staff outputs.

I.2.2 Processing of an Intelligence Spot Report

The parallelism between the Class 1 event thread in Figure I-1 and the staff procedure to be executed by a populated G2 staff Module is illustrated in Table I-2. The table shows in separate columns the processing of an incoming Intelligence Spot Report that will occur in simulation when the G2 module is simulated juxtaposed with the staff procedure for the same report when the G2 module is played by human players.

I.2.3 Processing of a Brigade/Battalion Situation Report

The parallelism between the Class 1 event thread in Figure I-2 and the staff procedure to be executed by a populated G3 Staff Module is illustrated in Table I-3. The talbe shows the same juxtaposition of the simulated and live module procedures as that given in Table I-3.

I.3 DESIGN PROBLEMS

The top-down design of the Division Level Battle Simulation is essentially complete with the addressal of Class 1 events for simulated staff modules. However, as stated above, during the preliminary definition of the Class 1 action steps for simulated staff modules, SAI uncovered two design problems which are sufficiently critical to warrant additional design effort.

The design objective was to construct the simulated staff modules in such a manner that the modules would initiate outputs or respond to inputs in a "perfect" manner, i.e., based upon those staff actions required of a particular staff section within doctrinal and field manuals. Underlying the design philosophy was the thought that this concept would allow ARI investigators to isolate (or insulate) populated staff modules in order to achieve maximum control of the experiment. However, as the design took form and substance it became apparent that although our design achieved the level of experimental control desired it would not truly reflect a variable level of command and control by populated staff modules.

The second design problem concerns the level of detail required within a populated module. Large amounts of data are required by division staff sections to effect decisions. Obviously, the computer has no problem organizing and recalling the data. Just as obviously, it became clear that populated modules would be spending an inordinate

Table I-2

PROCESSING OF AN INTELLIGENCE SPOT REPORT

Class 1 Events in a Simulated G2 Staff Module.	Staff Procedure in a Live G2 Staff Module
Event 101 - Receipt of an Intelligence Spot Report. This event will occur 3 to 10 minutes after Event No. 443 (Intel Spot Report).	When the teletype printer finishes printing the Intel Spot Report, the printer text is torn off.
Event 120 - Filing and Sitmap Update. This event will occur 10 to 15 minutes after Event No. 101 to account for journal entry, journal filing, possible posting on the Significant Events Chart and/or updating the ENSIT map.	The incoming spot report is logged into the G2 journal. The internal processing is then determined by the subject matter of the report. If the report signals a significant combat event, this event is posted on the Significant Events Chart; if it signals a significant change in the enemy situation, appropriate changes are posted on the ENSIT map. Before further action is considered, the original report copy is filed in the G2 journal file.
Event 130 - External Distribution Routing. This event will occur 1 to 3 minutes after Event No. 120 to account for G2 determining the external routing for retransmission info copies. The event logic will be as follows: • If report signals possible target acquisition, it is routed to FSE and G3. • If report suggests significant ENSIT changes, it is routed to CG and G3 Each addressee selected triggers a separate Event No. 199 (Rxmit).	The G2 determines the external routing of retransmission copies based on the subject matter of the report. • If the report does not signal a possible target acquisition or a massive ENSIT change, no info copies are retransmitted. • If the report signals a possible target acquisition, info copies are routed to the Fire Support Element and to G3 Operations. • If the report signals a significant ENSIT change, info copies are routed to the Command Group and to G3 Operations.

PROCESSING OF AN INTELLIGENCE SPOT REPORT (CONT.)

Class 1 Events in a Simulated G2 Staff Module.	Staff Procedure in a Live G2 Staff Module
Event 170 - Analysis of G2 Alternatives. This event will occur 3 to 30 minutes after Event No. 130 to reflect the time the G2 takes to determine the response to the spot report. The event logic will be as follows: • If no further action required, no follow-on events are triggered. • If the required action is a frag order (Intel), Event 190 is triggered. • If a staff query or query to field required, Event 191 is triggered. • If a request for consideration is required, Event 192 is triggered. • If a request for concurrence is required, Event 193 is triggered.	The G2 analyzes the subject of the report in the framework of the ENSIT information his section has on file. He then determines what action, if any, is required. • If no further action required, the procedure is completed. • If further intelligence data must be collected, a frag order (Intel) is issued redirecting the data collection resources. • If an update on status of ACS troops indicated, a query is initiated to G3. • If a reconnaissance-in-force is the required action, a request for consideration (frag order (OPS)) is initiated to G3. • If reconnaissance by air cavalry is required, a request for concurrence on the frag order is sent to G3.
Processing is complete when the latest occurrence among Event Nos. 170, 190, 191, 192, or 193 takes place.	The staff action is complete when the last of the follow-on staff outputs has been "transmitted" to the controller.

Table I-3

PROCESSING OF A BRIGADE/BATTALION SITUATION REPORT

Class 1 Events in a Simulated G3 Staff Module	Staff Procedure in a Live G3 Staff Module
Event 101 - Receipt of the Bde/Bn Situation Report. This event will occur 6 to 15 minutes after Event No. 465 (Bde/Bn Sitrep).	When the teletype printer finishes printing the Situation Report, the printed text is torn off.
Event 120 - Filing and Sitmap Update. This event will occur 10 to 15 minutes after Event No. 101 to account for journal entry, journal filing, possible posting on the Operations Sitmap and/or Unit Status Board.	The incoming situation report is logged into the Operations journal. The internal processing of the report is then modified according to the salient ENSIT and FRENSIT aspects of the reported situation. If subordinate units of the report initiator have relocated their forward elements, headquarters, or front line trace, these changes are posted on the Operations Sitmap; if the report reflects significant casualty losses for the subordinate units, these are posted as decrements on the G3 Unit Status Board. The situation report is then reproduced, as required, and the original filed for use in preparation of the Division Sitrep at a later time.
Event 130 - External Distribution Routing. This event will occur 1 to 3 minutes after Event No. 120 to reflect the time G3 takes to authorize the retransmission of info copies to selected addressees. Each addressee selected triggers a separate Event No. 199 (Rxmit).	The G3 determines the external routing of retransmission info copies. Ordinarily, copies of the Situation Report are routed to all other staff elements except the Command Group. If the report signals or completes the signal for either an exploitable enemy weakness, an impending disaster on the friendly forces, or other significant circumstance, an info copy is routed to the Command Group also.

PROCESSING OF A BRIGADE/BATTALION SITUATION REPORT (CONT.)

Class 1 Events in a Simulated G3 Staff Module	Staff Procedure in a Live G3 Staff Module
Event 180 - Analysis of G3 Alternatives. This event will occur 5 to 23 minutes after Event No. 130 to reflect the time the G3 takes to determine what course of action, if any, is required. • If no action is required at this time, no follow-on event is triggered. • For each frag order (OPS) issued as part of the required action, a separate Event No. 190 is triggered. • For each staff query initiated as part of the required action, a separate Event No. 191 is triggered. • For each request for concurrence initiated as part of the required action, a separate Event No. 192 is triggered. • For each request for consideration initiated as part of the required action, a separate Event No. 193 is triggered.	The G3 analyzes the situation report in the framework of the existing situation, to include the committed and uncommitted friendly forces, and future operational objectives. He then determines whether action is required at this time. • If no action is required at this time, the procedure is completed. • If action is required and if the situation can be handled without further staff coordination, the G3 simply issues the necessary frag order(s) (OPS). • If the situation requires staff coordination, the G3 initiates either queries or requests to the other cognizant staff sections or the commander containing one or more courses of action he proposes.
Processing is complete when the latest occurrence among Event Nos. 180, 190, 191, 192, and 193 takes place.	The staff action is complete when the last of the follow-on staff outputs is "transmitted" to the controller.

amount of time posting situation maps, record keeping, and other similar functions. It is felt that this aspect of the design would cause boredom and decrease players interests in the game.

Both of these problems are discussed in detail below.

I.3.1 Simulation of Command and Control

This problem is best explained by recalling all five classes of events and their interactions. Class 1 events occur within staff modules; Class 2, 3, and 4 events occur at the staff module boundaries; and Class 5 events occur within the Battle Outcome Generator. The design provides that these events are to be connected by event threads which cause the successive events to occur in the prescribed logical sequence. Within a populated module the players themselves carry out the action steps and react to or generate the interface events. In a simulated module, these threads must be provided within the simulation. It is conceptually a simple matter to close the event threads that are routed through the simulated modules so that they are essentially independent of any other module, i.e., so that they are essentially insulated from perturbations to the information flow that might occur if a populated module did not behave in the manner being simulated when the module is not populated. If the model were designed in this manner, the only abnormal behavior of a populated module that would be reflected in the simulation would be failure to close an event thread that led through that module. Such a design would not be responsive to the major objectives of providing feedback to players on the results of their actions. The simulation should show the effect of degraded performance within a live staff module in all of the other command control activities being simulated. This will require very careful and detailed analysis of all event thread routing to insure that the effects of incorrect staff action by a live staff module are, in fact, portrayed as unforeseen events and delayed and/or degraded reports that would result. Examples of such degraded performance by a live G2 module would be: faulty tasking of sensor systems that would reduce the enemy information available to the command groups or the G3; assignment of an intelligence mission to the cavalry squadron without coordination with G3 which resulted in non-availability of the squadron for an operational mission; or faulty tasking of sensor systems that denied important target information to the FSE.

One important facet of this problem that cannot be overlooked is the real world response time to such faulty actions. For example, faulty tasking of sensors by G2 that resulted in degraded target information for the FSE would affect the ongoing battle. Faulty sensor tasking that reduced intelligence available to the G3 or the command group could affect the ongoing battle, but would even more likely lead to bad planning for tomorrow's battle. The latter effect

is difficult to capture in a 4-12 hour scenario. Thus, the effects of faulty staff actions that lead to degraded planning for future action may be difficult to capture without implementing the faulty plan.

I.3.2 Task Design for Interactive Simulations

If the simulation is to be a cost-effective tool for research, not only must the personnel requirements be held to a minimum in the control section, but the number of players in a live staff module must also be held to a credible minimum and the design must be such that the players maintain a high degree of interest. One way to approach this goal is to eliminate some of the low skill level, high frequency, and hence, boring tasks within the staff module. An insight as to what this entails may be gained by viewing the staff module as a decision node and looking at the sequence of kinds of processes that it performs.

Figure I-3 is a representation of a series of processes such a decision node carries out on information flowing through the node. At the bottom of the figure is an external information stream--the communications network--which the node taps and to which it contributes. Six progressively more complex processing levels are depicted. The information that flows up from the external stream must first be received, a Level I or communications process. The received information in a tactical military system is in the for of orders (plans), summaries, reports, queries, or requests. These must be tagged, sorted, recorded (think of the large number of telephone and voice radio inputs), and used to update files; much of it is also displayed on situation maps or "totes." The composite of these processes may be called Level II or message center and filing processes. The Level II processes produce a data base, some part of which is in the form of visible displays for ready reference. It is pertinent to comment in passing that the graphical representation of certain kinds of information on a situation map is the substitute for the hill overlooking the battlefield and for helicopters when the latter cannot fly or see.

The next four process levels use the files in successively more complex ways. Note that they, too, update the files, but these updates are more in the nature of manipulations on the basic data added by Level II. These utilization processes begin with Level III, selective retrieval of information from the files. At Level IV, such data are aggregated by means of a priori rule, which may vary from simple arithmetic combinations to more sophisticated rules of combination such as the appearance of three or four maneuver battalions operating in the same area triggers the search for their associated fire and service support elements. The important consideration is that the rules for aggregation have been determined in advance and are stored. Process Level V also aggregates data, but the rules for aggregation are devised by the user in real time--that is, he hypothesizes, through pattern recognition, new and higher level

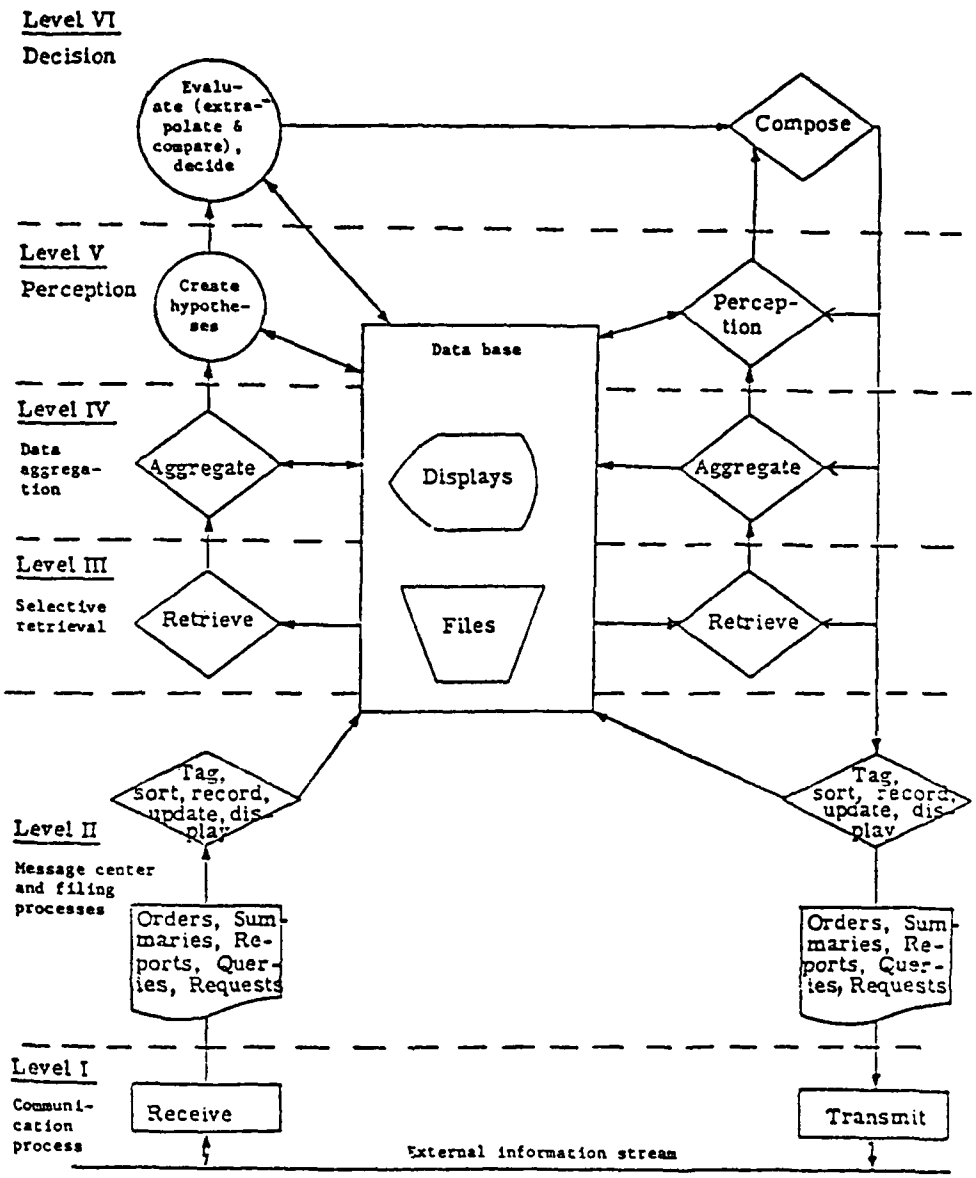


Figure I-3. Process Levels in a Tactical Decision-Making Node.

interpretations of the data being presented. Level V produces what is commonly called "perception." At the highest level, Level VI, data aggregations are compared and evaluated, and one or more are selected. This last is the culmination of the decision process.

Emulating this series of processes that occur in a decision node is the design objective of the Class 1 events and their interconnecting event threads. Insofar as possible this decision process within simulated modules will be completed without controller intervention. This will have the desired effect of minimizing the amount of controllers required. On the other hand, in populated modules the goal is to reduce those lower level tasks to a minimum (without losing realism) in order to maintain player interest and allow the ARI investigators to concentrate on the research objectives.

With this view of a manual information processing system, we can gain some insights as to what might happen when we, in effect shift the interface between the staff module and the outside world from its peripheral communication nodes and move some of the lower level communication and message center and filing functions out of the module and into the simulation. We are faced with the problem of redefining the tasks to be conducted within the staff module in such a way that the node remains a realistic, credible, military decision-making environment, i.e., appears to the players to be a staff element and not a laboratory for studying human reactions. The problem is quite similar to that faced by the ADP-assisted system designer because it amounts to shifting the interface between the decision maker and the outside world.

I.4 EXPAND DESIGN OBJECTIVES

With a clear understanding of the two design problems as presented above, SAI recommends that the design phase of this effort be expanded to allow us to achieve a fully responsive design, i.e., one that overcomes these deficiencies and advances the state of the art of interactive battle simulations.

DESIGN NOTE J

EVENT THREAD CHARTS

J.1 EXPLANATION OF THE CHARTS

This design note contains the event thread charts specifying the logical progenitors and followers of all defined events in the simulation. The index to the charts is given in Table J-1. The index provides a general event sequence description, the numbered events involved, and page number for each chart.

The event threads associated with a specific tactical information message are given in a chart whose chart number is the same as the basic reference number of the message. The reference numbers stem from Design Note A.

The event threads dealing with internal staff action steps (Class 1 events), as well as maneuver and engagement events (Class 5), are given on charts whose chart numbers are those above 100. The definitions of the events in these threads are as yet incomplete.

Table J-1. Index to the Event Thread Charts.

CHART NO.	GENERAL EVENT SEQUENCE SHOWN	DEFINED EVENTS INCLUDED CL 1	CL 2	CL 3	CL 4	CL 5	PAGE NO.
01	Query by Command Group	(104,191)	201	301		501	J-5
02	Nuclear Release Request	(103,194)	202	302		502	J-6
03D	Mission Analysis	(189)	203				J-7
04D	Commander's Guidance	(189)	204				J-8
05	Commander's Decision	(106,193)	205				J-9
10	Query by FSE	(104,191)	210	310		510	J-10
11D	Query to Corps on Frag Order (FS)			311		511	J-11
12	Issuance of Frag Order (FS)	(103,190)	212	312		512	J-12
13	Immed. Rqst to Corps for FS	(103,193)	213	313		513	J-13
14	Prplnnd Rqst to Corps for FS	(103,194)	214	314		514	J-14
15	Arty Sitrep	(101,199)	215		415	515	J-15
16	Target List (Arty)	(101,199)	216		416	516	J-16
17	FU Fire Spt Cap	(101,199)	217		417	517	J-17
18	EU Fire Spt Cap	(101,199)	218		418	518	J-18
19	Post Strike Analysis	(112,189)	219				J-19
20	Fire Spt Annex	(189)	220				J-20
21	Staff Request by FSE	(105,106,192,193)	221				J-21
22	Staff Response by FSE	(107,108,110,111,195,196,197,198)	222				J-22
23	Immed. Rqst for FS	(101,199)	223		423	523	J-23
23D	Immed. Rqst from Adj Div				423D	523D	J-24
24	Prplnnd Rqst for FS	(101,199)	224		424	524	J-25
25	Target (Intel)	(101,199)	225		425	525	J-26
26	Fire Spt Status	(101,199)	226		426	526	J-27
27	Query on Issued Frag Order (FS)				427		J-28
28D	Fire Spt Est/Annex				428	528	J-29
29D	Corps Frag Order (FS)				429	529	J-30
30	Query by G2	(104,191)	230	330		530	J-31
31D	Query to Corp on Frag Order (I)			331		531	J-32
32	Issuance of Frag Order (I)	(103,190)	232	332		532	J-33
33D	Issuance of Div Intsum		233	333		533	J-34
34	NBC Report	(101,199)	234	334	434	534, 534D	J-35
35	Weather Forecast	(101,199)	235		435	535	J-36
36	Intel Para Div Sitrep	(189)	236				J-37
37D	Intel Estimate	(189)	239				J-38
38D	Intel Annex	(189)	238				J-39
39	Staff Request by G2	(105,106,192,193)	239				J-40

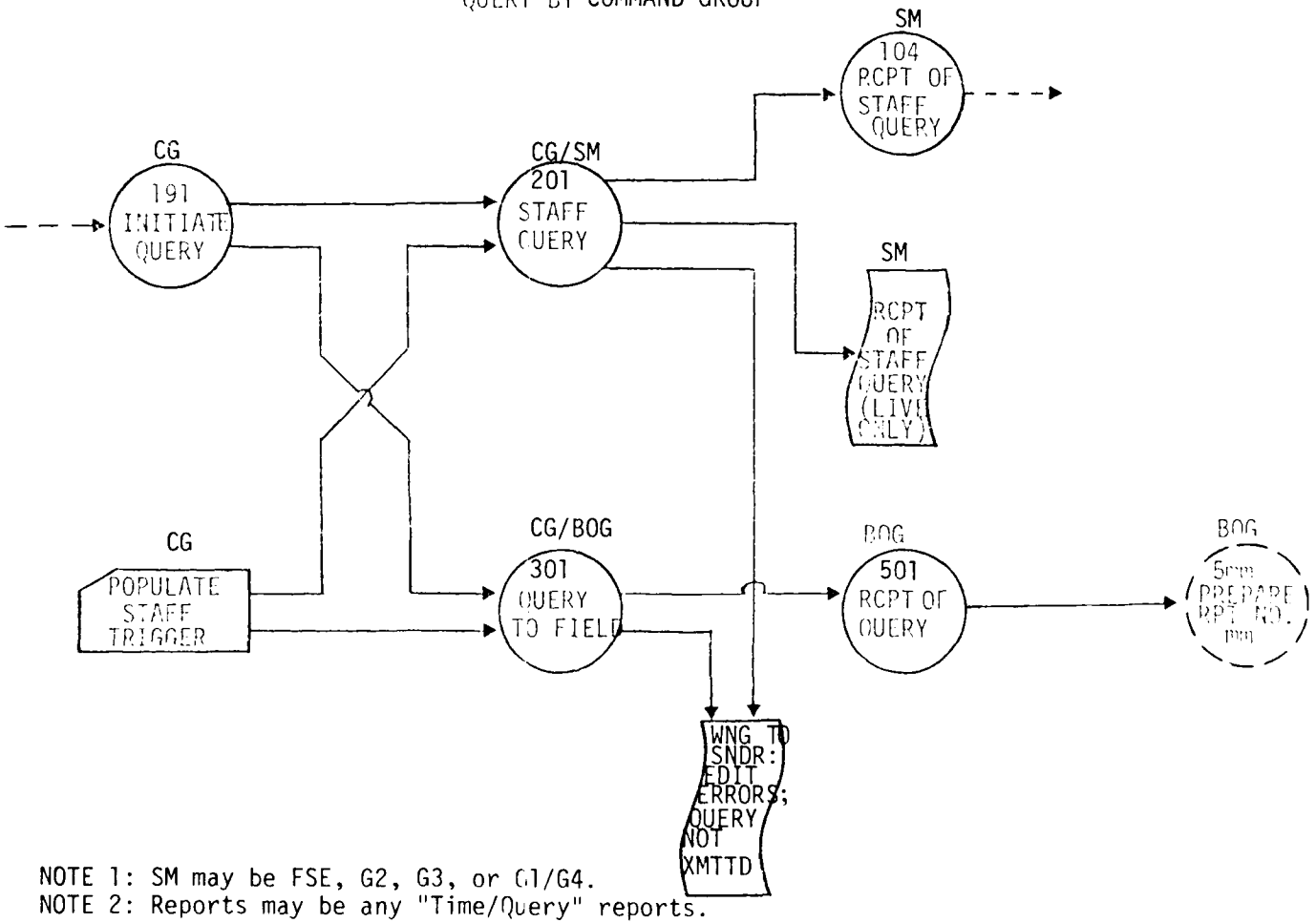
Table J-1. Index to the Event Thread Charts (Continued).

CHART NO.	GENERAL EVENT SEQUENCE SHOWN	DEFINED EVENTS INCLUDED					PAGE NO.
		CL 1	CL 2	CL 3	CL 4	CL 5	
40	Staff Response by G2	(107,108,110,111,195,196,197,198)					
			240				J-41
41	Brigade Intsum	(101,199)	241		441	541	J-42
42	Shell Report	(101,199)	242		442	542	J-43
43	Spot Report	(101,199)	243		443	543	J-44
44	Cbt Intel Report	(101,199)	244		444	544	J-45
44D	Cbt Intel Report from Corps				444D	544D	J-46
45	Post Strike Damage Rpt	(101,199)	245		445	545	J-47
46	Est En Str/Disp	(101,199)	246		446	546	J-48
47	Aggregated Target List (I)	(101,199)	247		447	547	J-49
48	Query on Issued Frag Order (I)				448		J-50
49D	Corps Frag Order (I)				449	549	J-51
50	Query by G3	(104,191)	250	350		550	J-52
51D	Query to Corps on Frag Order (OPS)			351			J-53
52	Issuance of Frag Order (OPS)	(103,190)	252	352		552	J-54
53D	Issuance of Division Sitrep	(194)	253	353		553	J-55
54	Issuance of Nuclear Wrng Order	(103,190)	254	354		554	J-56
55	Issuance of AD Wrng Order	(103,190)	255	355		555	J-57
56	Request for Reserves	(103,194)	256	356		556	J-58
57D	Operations Plan	(103,194)	257	357		557	J-59
58D	Operations Estimate	(189)	258				J-60
59	Initial Enemy Contact Report	(101,199)	259		459	559	J-61
60	Unit Progress Report	(101,199)	260		460	560	J-62
61	Loss Contact with Friendly Unit	(101,199)	261		461	561	J-63
62	Enemy EOOB	(101,199)	262		462	562	J-64
63	Staff Request by G3	(105,106,192,193)					
			263				J-65
64	Staff Response by G3	(107,108,110,111,195,196,197,198)					
			264				J-66
65	Bde/Bn Sitrep	(101,199)	265		465	565	J-67
66	Air Defense Alert	(101,199)	266		466	566	J-68
67	Organic Avn Sortie Status	(101,199)	267		467	567	J-69
68	Query on Issued Frag Order (OPS)				468		J-70
69	Query on Issued Nuc Wrng Order				469		J-71
70	Query on Issued AD Wrng Order				470		J-72
71D	Corps Frag Order (OPS)				471	571	J-73
72D	Ops Spcl Est/Annex				472	572	J-74

Table J-1. Index to the Event Thread Charts (Continued).

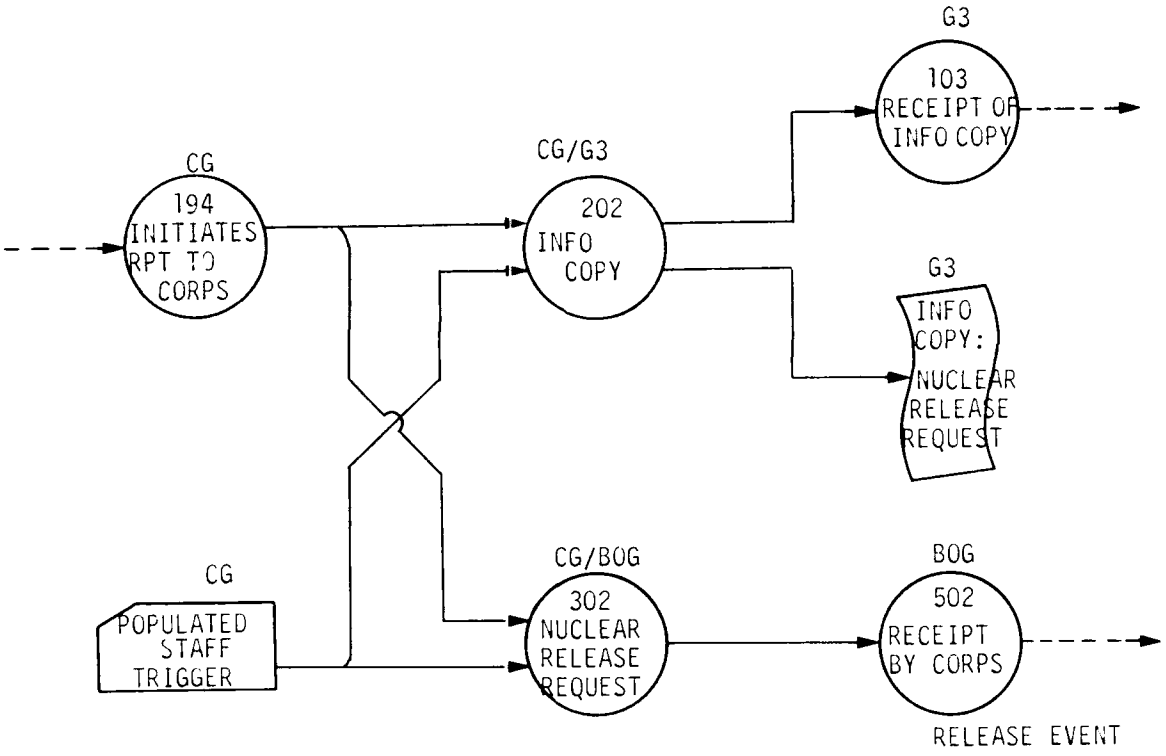
CHART NO.	GENERAL EVENT SEQUENCE SHOWN	DEFINED EVENTS INCLUDED CL 1	CL 2	CL 3	CL 4	CL 5	PAGE NO.
80	Query by G1/G4	(104,191)	280	380		580	J-75
81D	Query to Corps on Frag Order (CSS)			381		581	J-76
82	Issuance of Frag Order (CSS)	(103,190)	282	382		582	J-77
83D	Issuance of Div Pers Daily Sum	(103,194)	283	383		583	J-78
84D	Issuance of Periodic Log. Report	(103,194)	284	384		584	J-79
85D	Personnel Requisition	(103,194)	285	385		585	J-80
86	Immed. Rqst for Log Spt.	(101,199)	286		486	586	J-81
86D	Immed. Rqst to Corps	(103,194)	286D	386		586D	J-82
87D	CSS Estimate	(189)	287				J-83
88D	CSS Annex	(189)	288				J-84
89	Staff Request by G1/G4	(105,106,192,193)	289				J-85
90	Staff Response by G1/G4	(107,108,110,111,195,196,197,198)	290				J-86
91	Bde/Bn Pers Daily Summary	(101,199)	291		491	591	J-87
92	CAPE Report	(101,199)	292		492	592	J-88
93	PrpInnd Rqst for Log Spt	(101,199)	293		493	593	J-89
94	Query on Issued Frag Order (CSS)				494		J-90
95D	Corps Frag Order (CSS)				495	595	J-91
96D	Discom Sitrep	(101,199)	296		496	596	J-92
97D	CMO Estimate/Annex				497	597	J-93
108	Combat Engagement					508	J-94
140	Intelligence Received			(538,539,540)			J-95

EVENT THREAD CHART # 1
DEFINING EVENTS 104, 191, 201, 301, 501
QUERY BY COMMAND GROUP

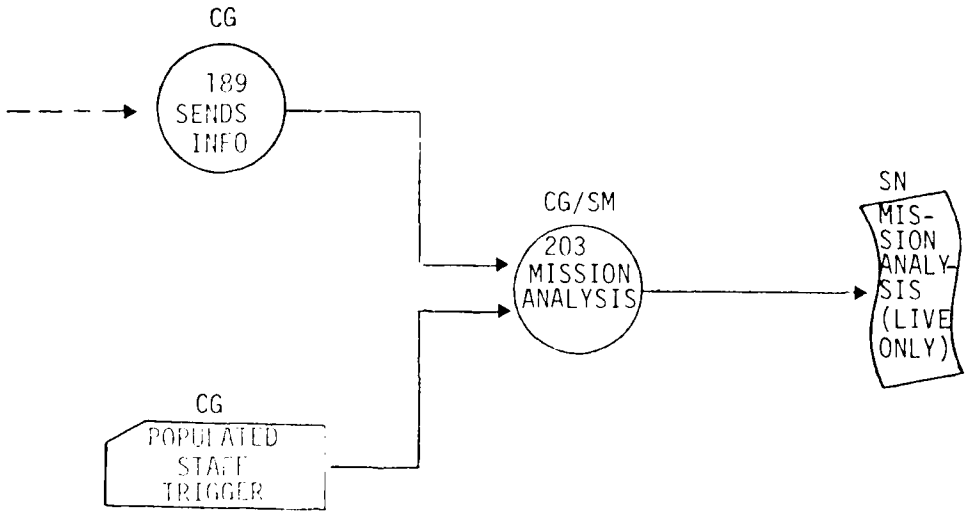


NOTE 1: SM may be FSE, G2, G3, or G1/G4.
NOTE 2: Reports may be any "Time/Query" reports.

EVENT THREAD CHART #2
DEFINING EVENTS 103, 194, 202, 302, 502
NUCLEAR RELEASE REQUEST

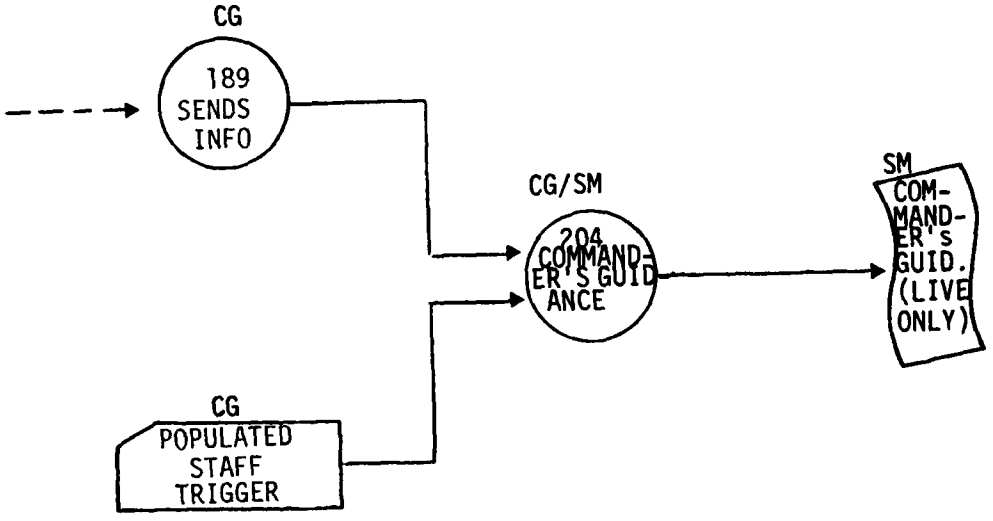


EVENT THREAD CHART # 03
DEFINING EVENTS 189, 203
MISSION ANALYSIS



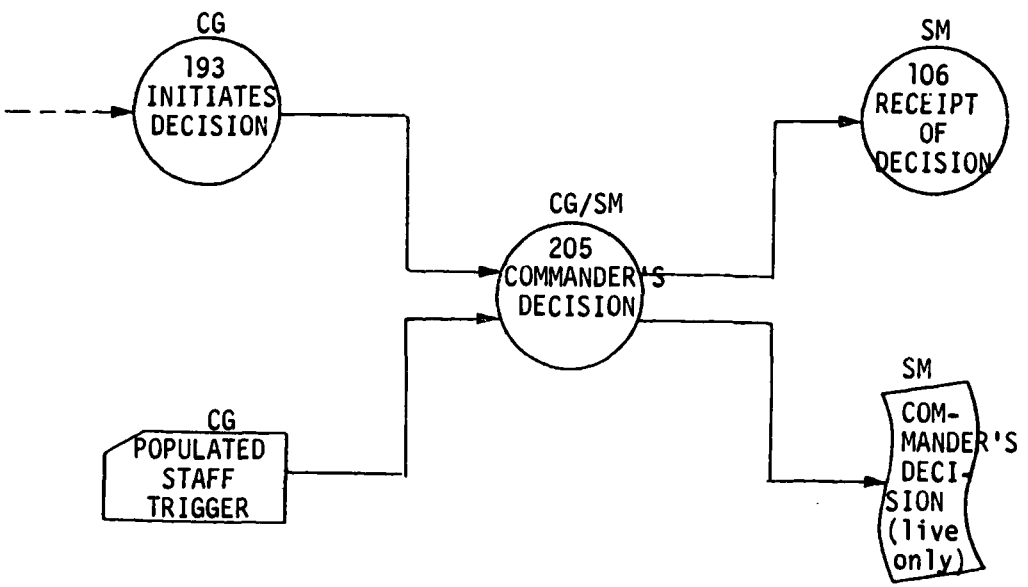
NOTE: SM includes all staff elements

EVENT THREAD CHART # 04
DEFINING EVENTS 189, 204
COMMANDER'S GUIDANCE



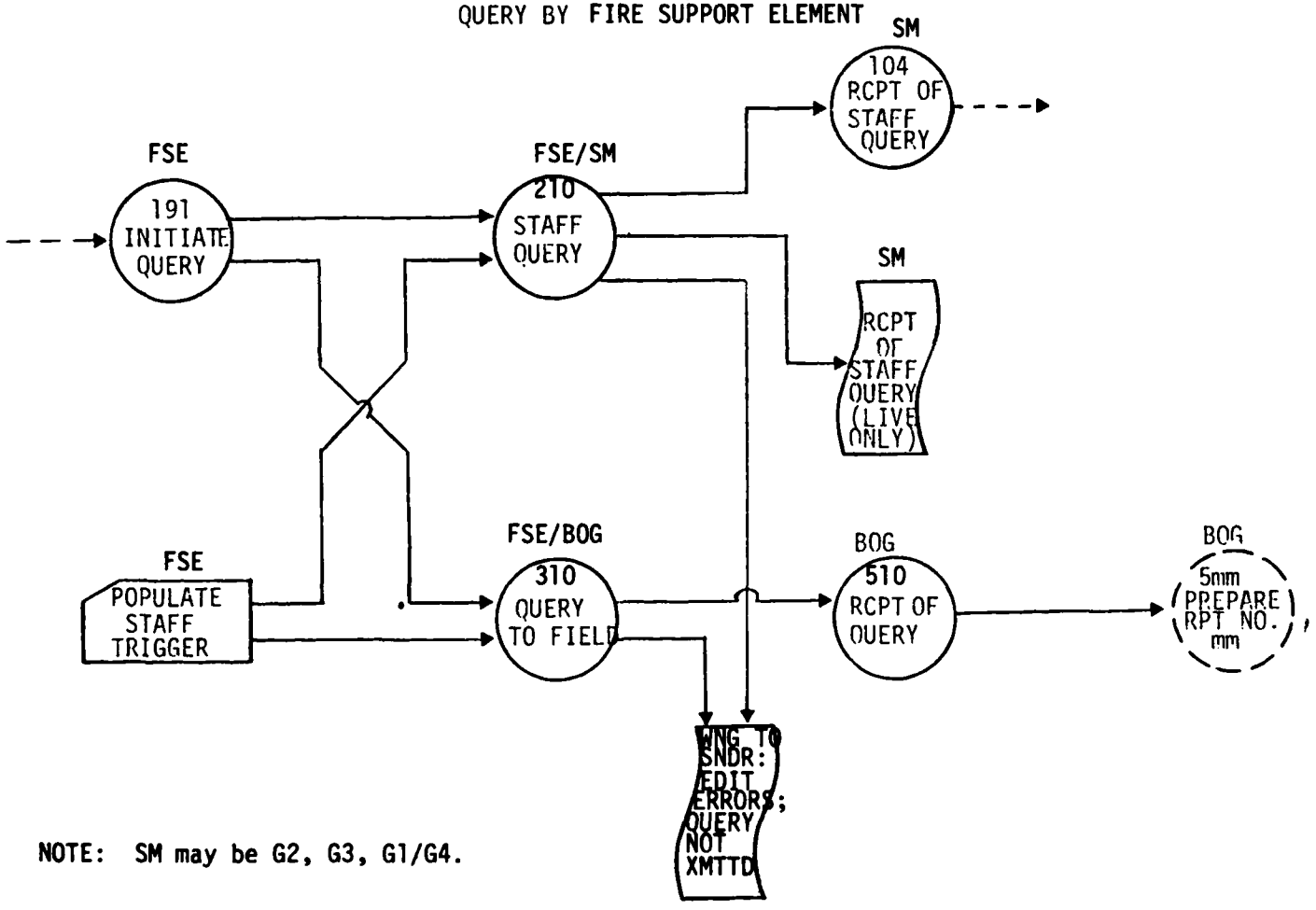
NOTE: SM may be any live staff element.

EVENT THREAD CHART #05
DEFINING EVENTS 106, 193, 205
COMMANDER'S DECISION



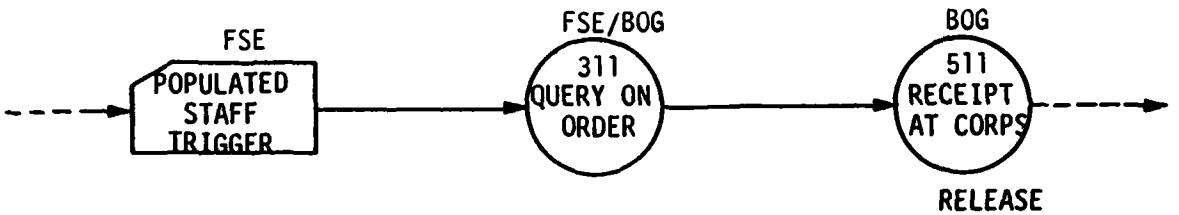
NOTE: SM may be any staff element.

EVENT THREAD CHART # 10
DEFINING EVENTS 104, 191, 210, 310, 510
QUERY BY FIRE SUPPORT ELEMENT

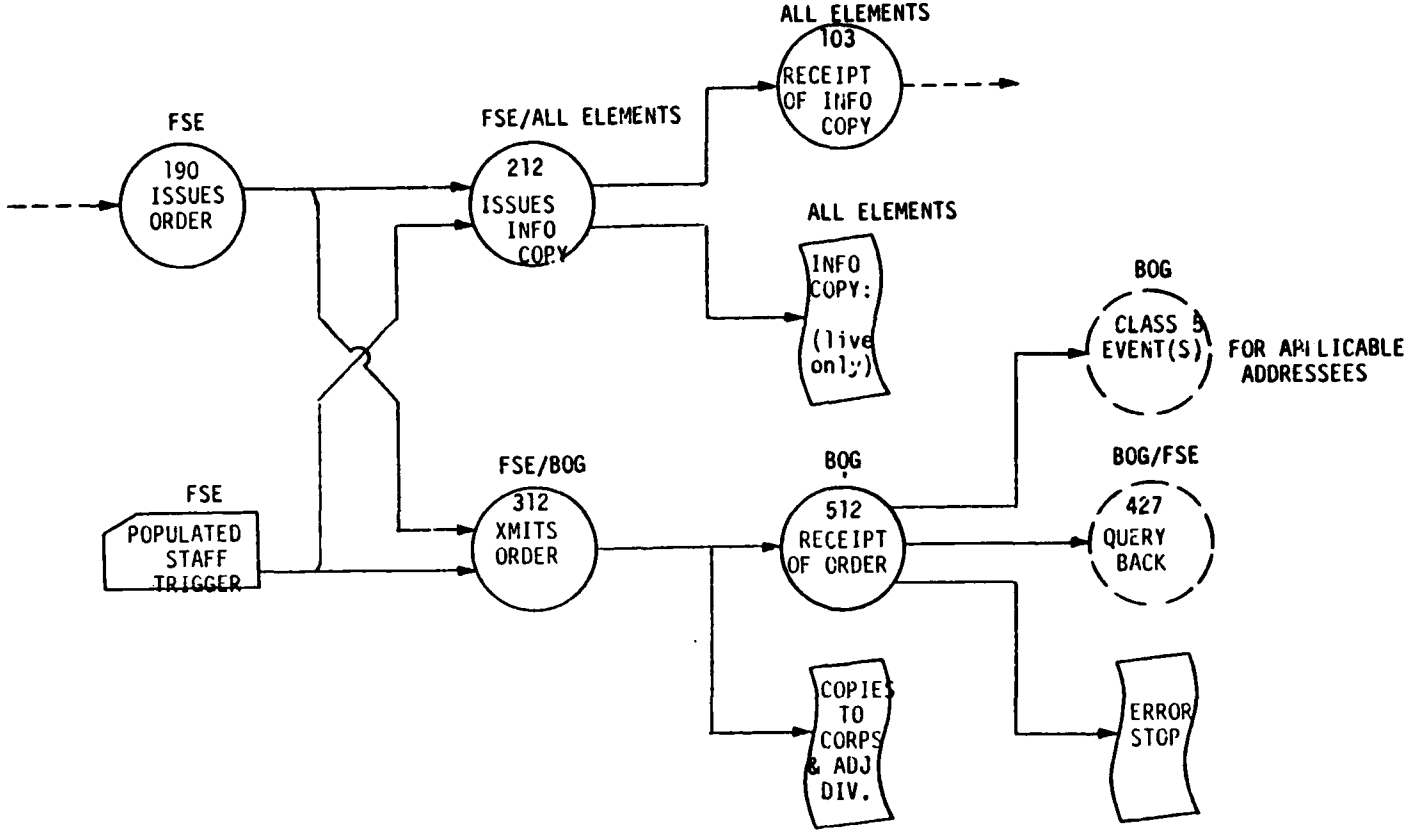


NOTE: SM may be G2, G3, G1/G4.

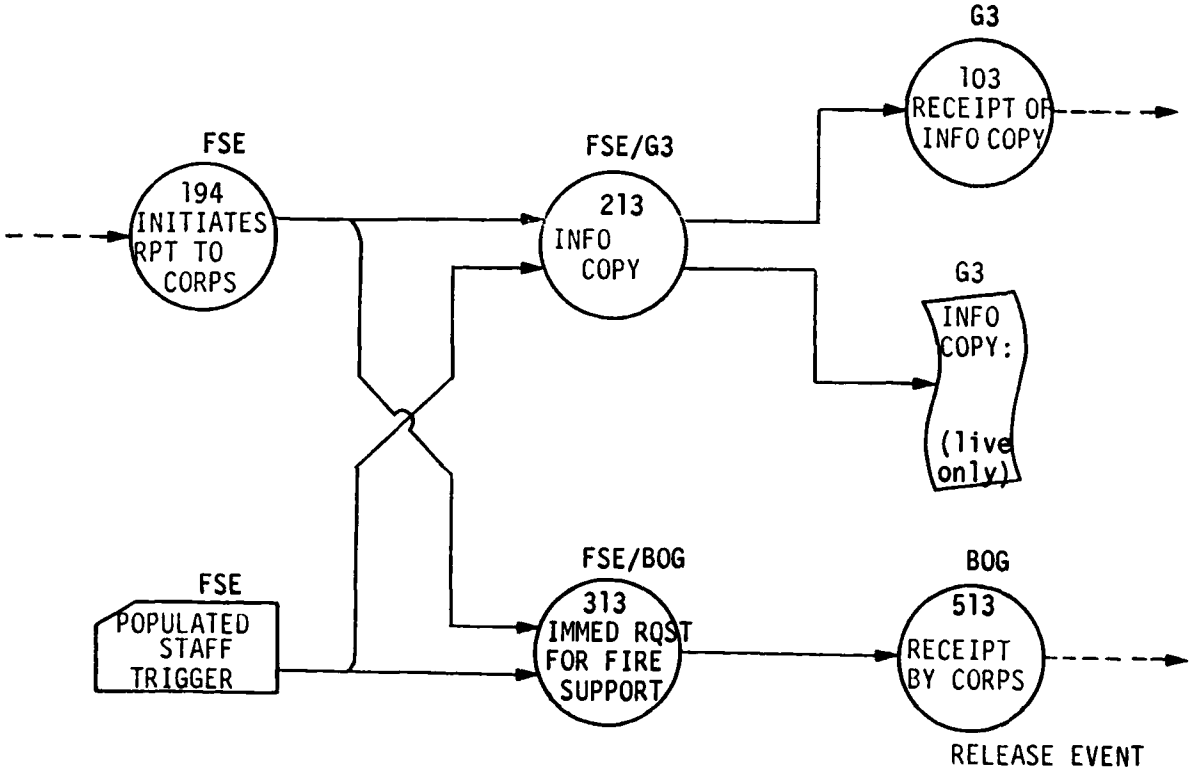
EVENT THREAD CHART #11
DEFINING EVENTS 311, 511
QUERY TO CORPS ON FRAG ORDER (FS)



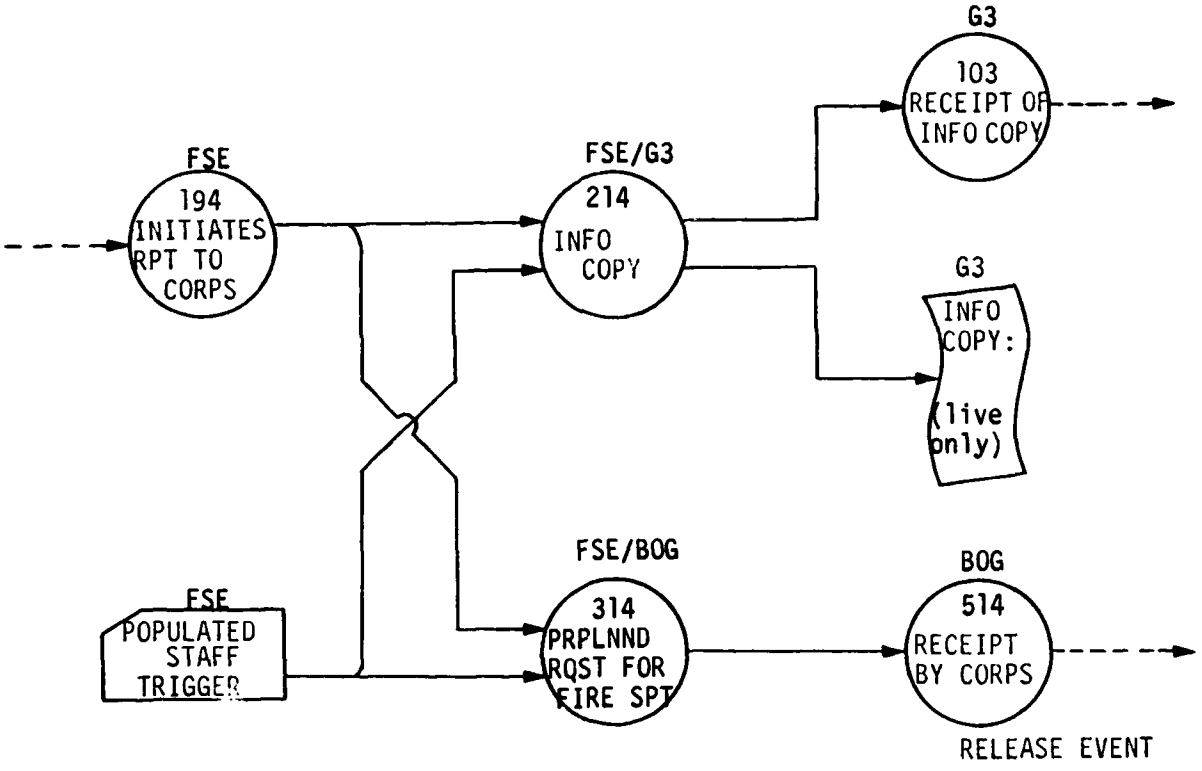
EVENT THREAD CHART #12
DEFINING EVENTS 103, 190, 212, 312, 512
ISSUANCE OF FRAG ORDER (FS)



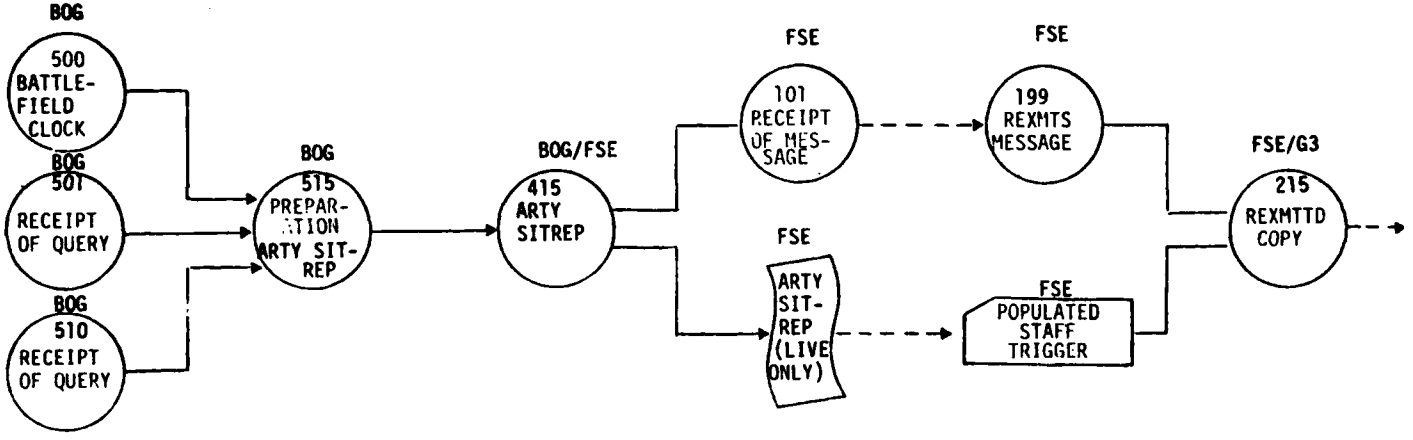
EVENT THREAD CHART #13
DEFINING EVENTS 103, 194, 213, 313, 513
IMMEDIATE REQUEST TO CORPS/ADJ DIV FOR FIRE SUPPORT



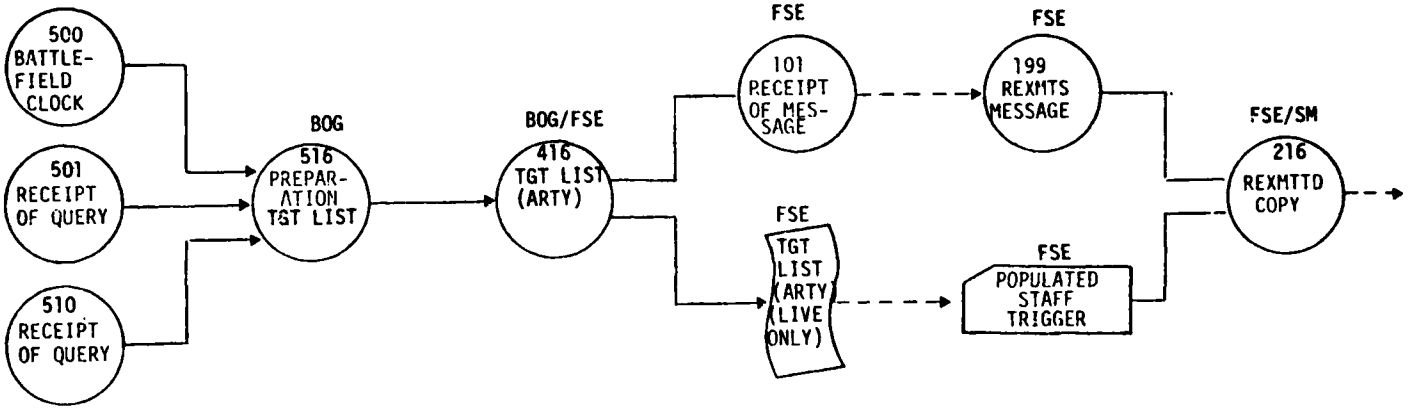
EVENT THREAD CHART #14
DEFINING EVENTS 103, 194, 214, 314, 514
PREPLANNED REQUEST TO CORPS FOR FIRE SUPPORT



EVENT THREAD CHART #15
DEFINING EVENTS 101, 199, 215, 415, 515
ARTILLERY SITUATION REPORT

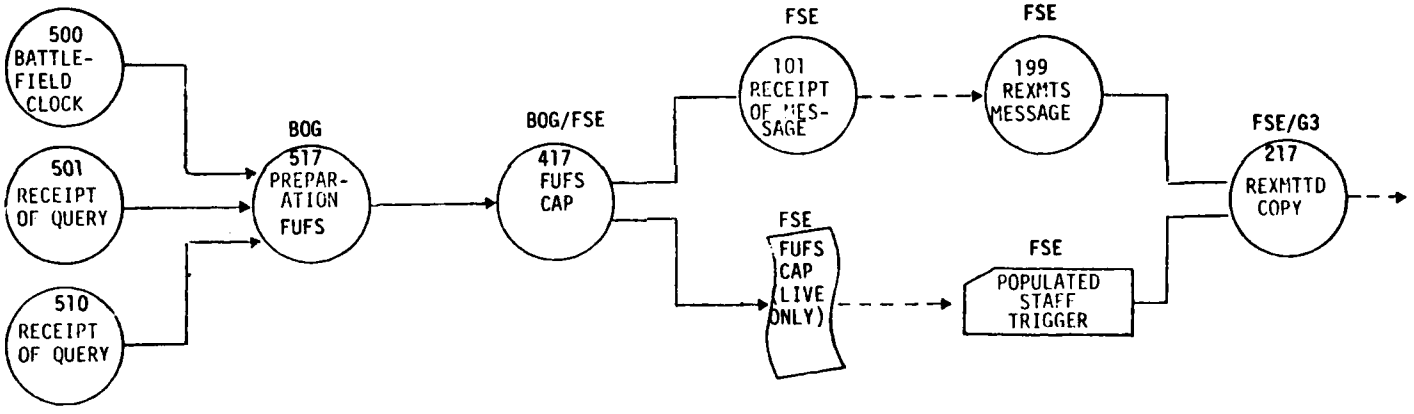


EVENT THREAD CHART #16
DEFINING EVENTS 101, 199, 216, 416, 516
TARGET LIST (ARTILLERY)

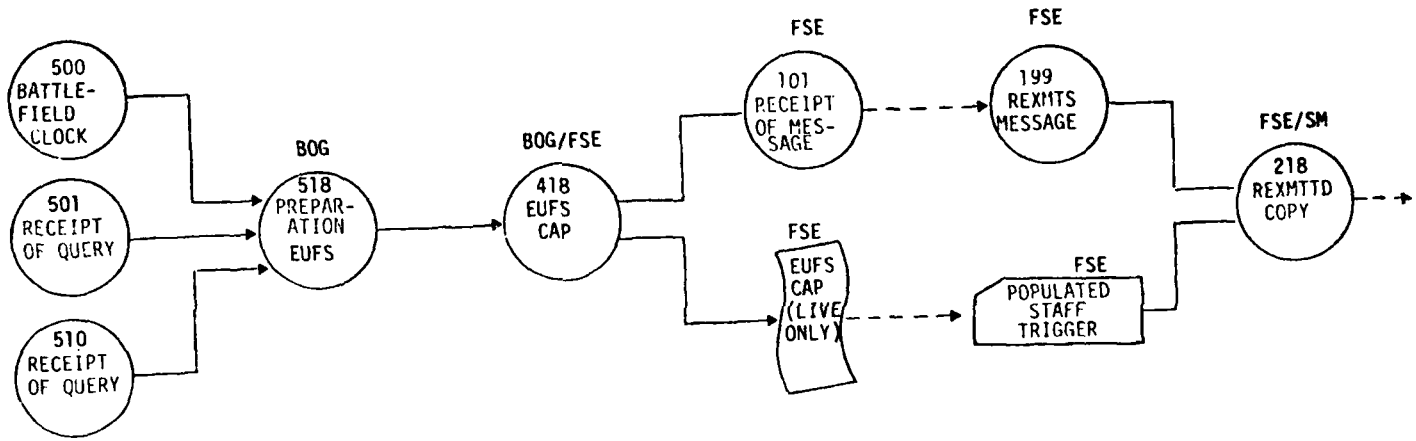


NOTE: SM includes G2, G3.

EVENT THREAD CHART #17
DEFINING EVENTS 101, 199, 217, 417, 517
FRIENDLY UNIT FIRE SUPPORT CAPABILITY

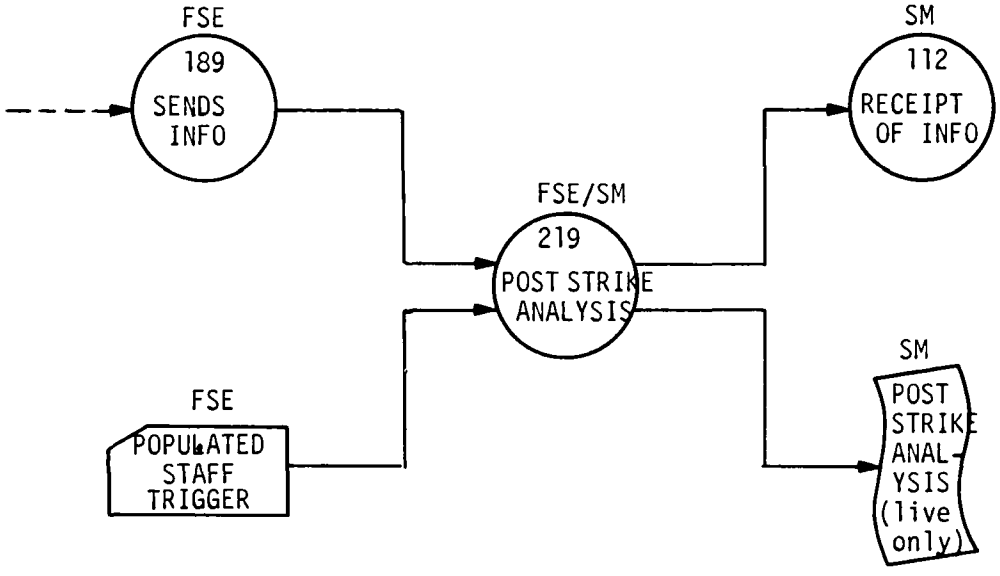


EVENT THREAD CHART #18
DEFINING EVENTS 101, 199, 218, 418, 518
ENEMY UNIT FIRE SUPPORT CAPABILITY



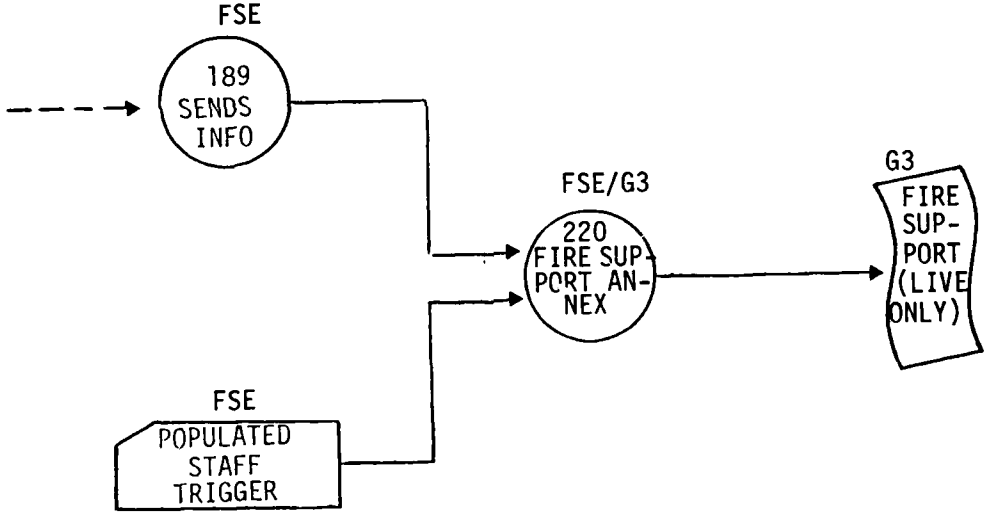
NOTE: SM includes G2, G3.

EVENT THREAD CHART #19
DEFINING EVENTS 112, 189, 219
POST STRIKE ANALYSIS

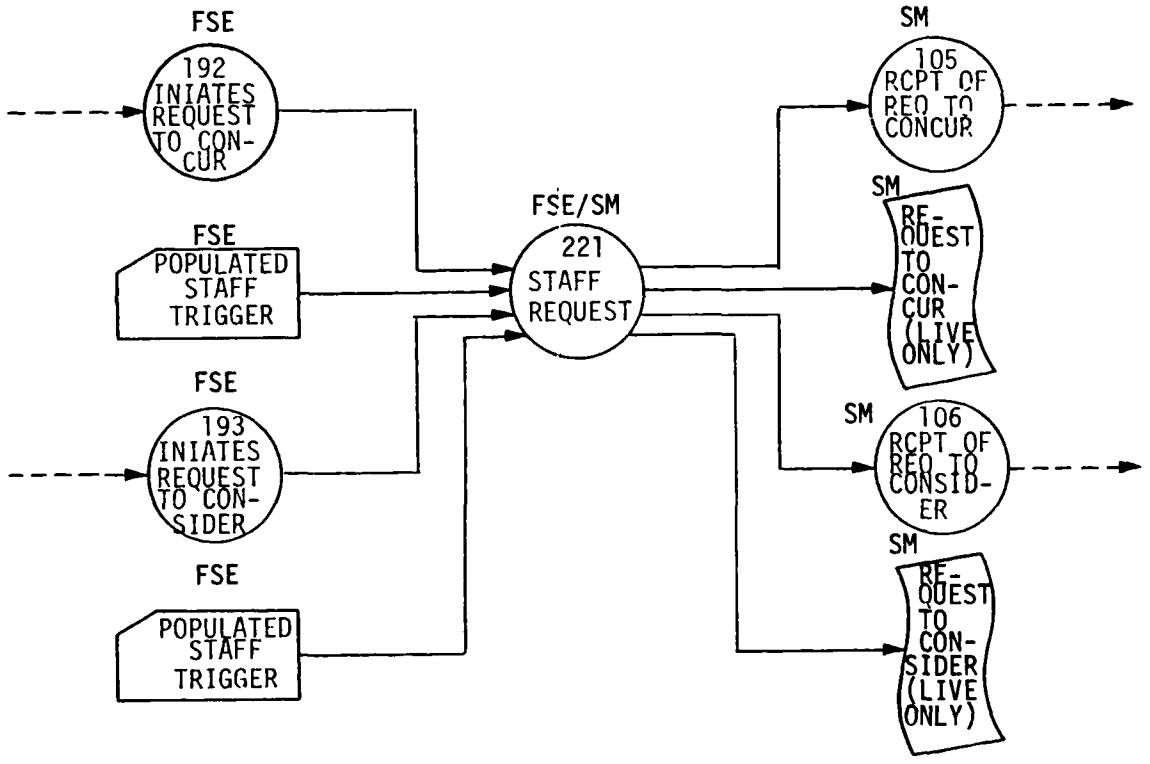


NOTE: SM includes CG, G2, G3

EVENT THREAD CHART # 20
DEFINING EVENTS 189, 220
FIRE SUPPORT ANNEX

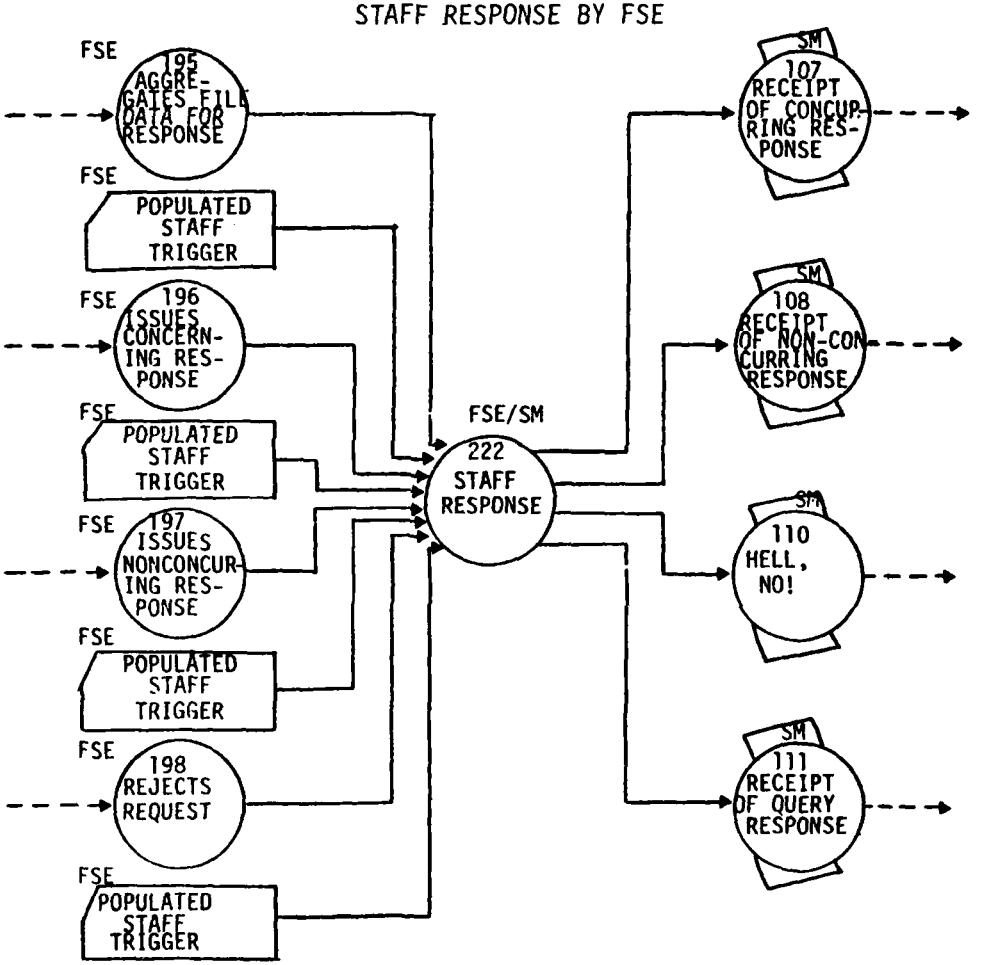


EVENT THREAD CHART #21
DEFINING EVENTS 105, 106, 192, 193, 221
STAFF REQUEST BY FIRE SUPPORT ELEMENT



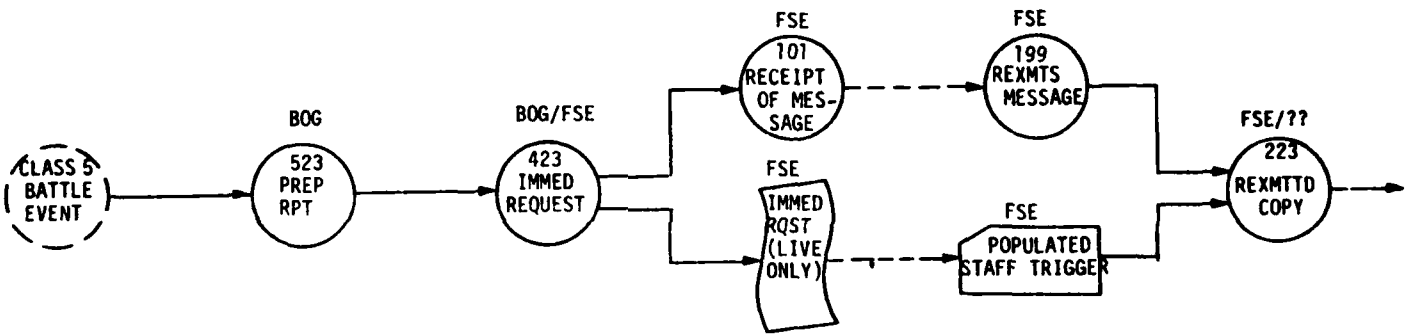
NOTE: SM may be G2, G3, or G1-G4.

EVENT THREAD CHART #22
DEFINING EVENTS 107, 108, 110, 111, 195, 196, 197, 198, 222
STAFF RESPONSE BY FSE

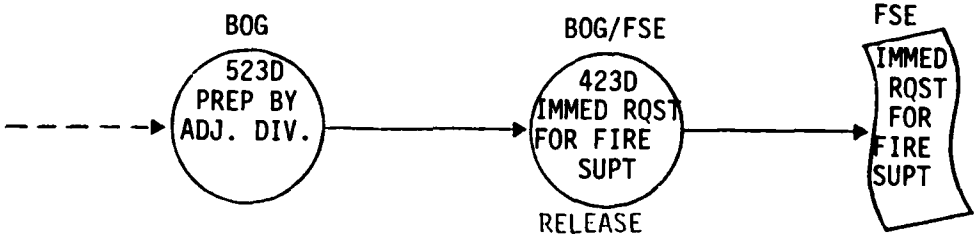


NOTE: SM may be G2, G3, G1-G4.

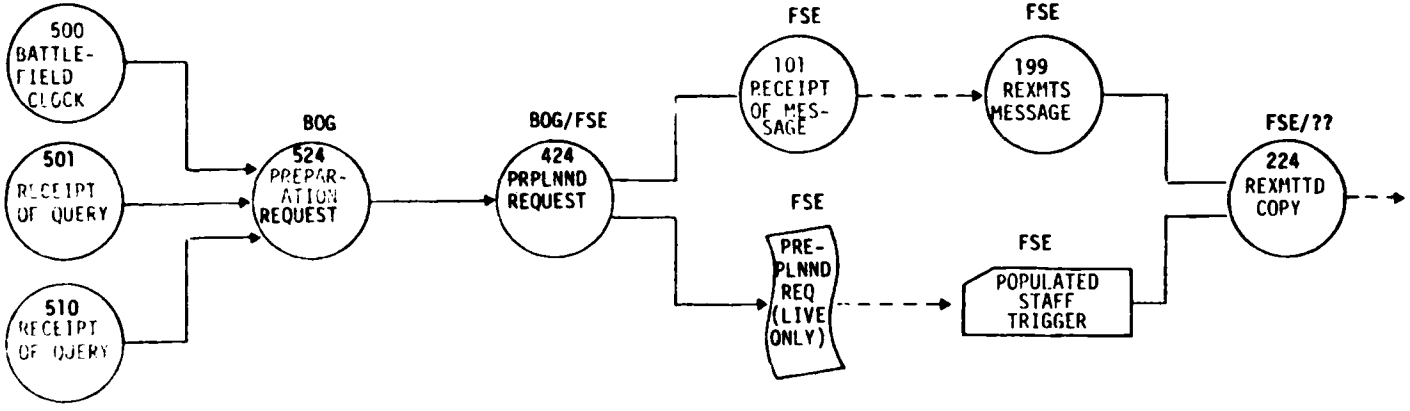
EVENT THREAD CHART #23
DEFINING EVENTS 101, 199, 223, 423, 523
IMMEDIATE REQUEST FOR FIRE SUPPORT



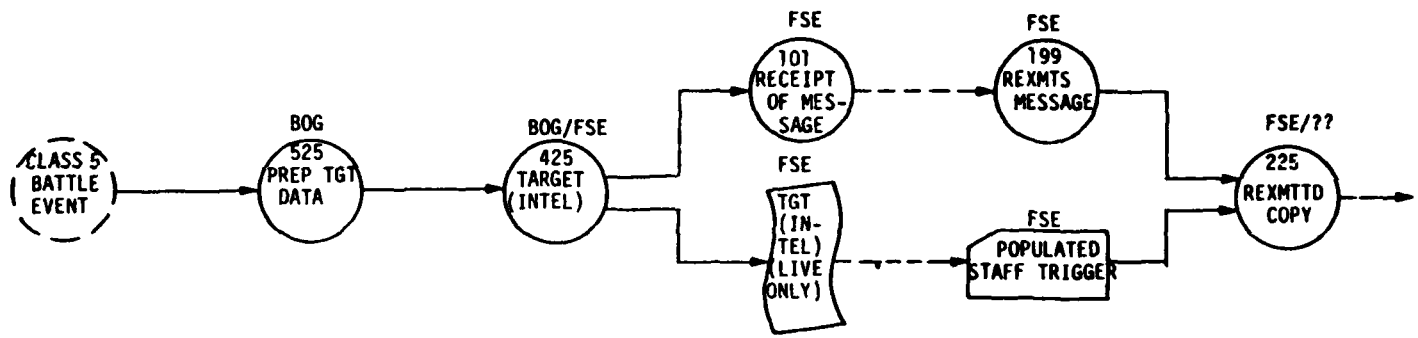
EVENT THREAD CHART # 23D
DEFINING EVENTS 423D, 523D
IMMEDIATE REQUEST FROM ADJ. DIV. FOR FIRE SUPPORT



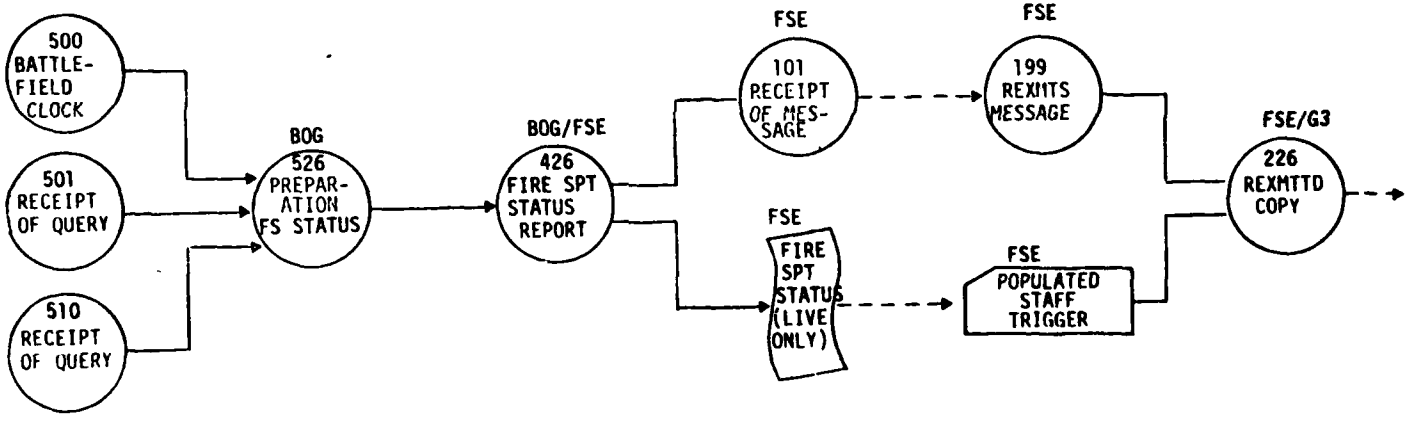
EVENT THREAD CHART #24
DEFINING EVENTS 101, 199, 224, 424, 524
PREPLANNED REQUEST FOR FIRE SUPPORT



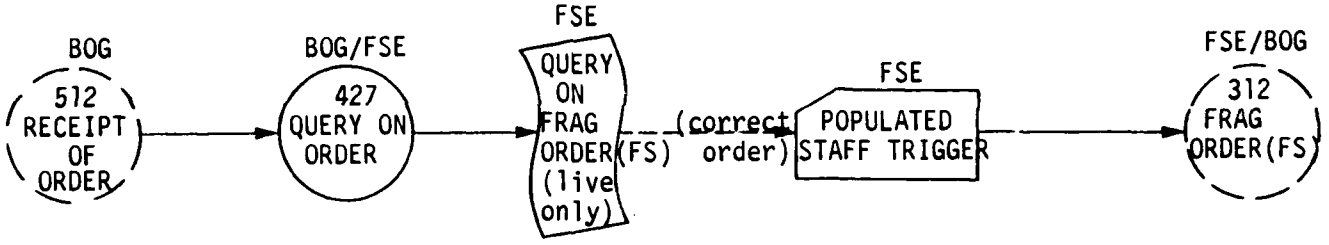
EVENT THREAD CHART #25
DEFINING EVENTS 101, 199, 225, 425, 526
TARGET (INTELLIGENCE)



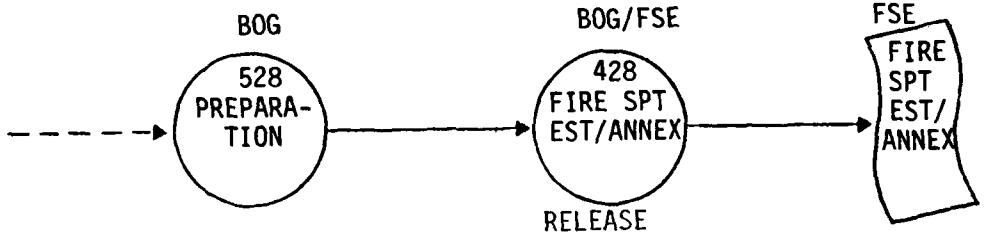
EVENT THREAD CHART #26
DEFINING EVENTS 101, 199, 226, 426, 526
FIRE SUPPORT STATUS REPORT



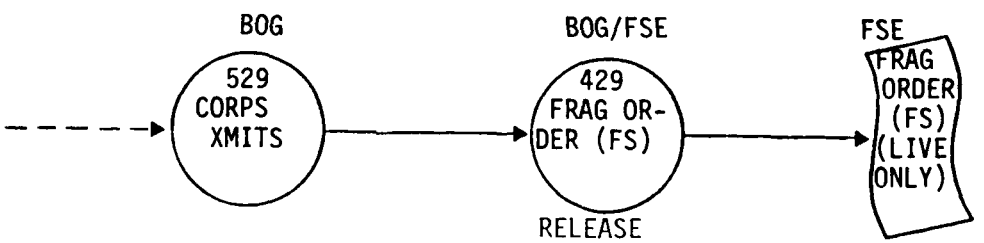
EVENT THREAD CHART #27
DEFINING EVENT 427
QUERY ON ISSUED FRAG ORDER (FS)



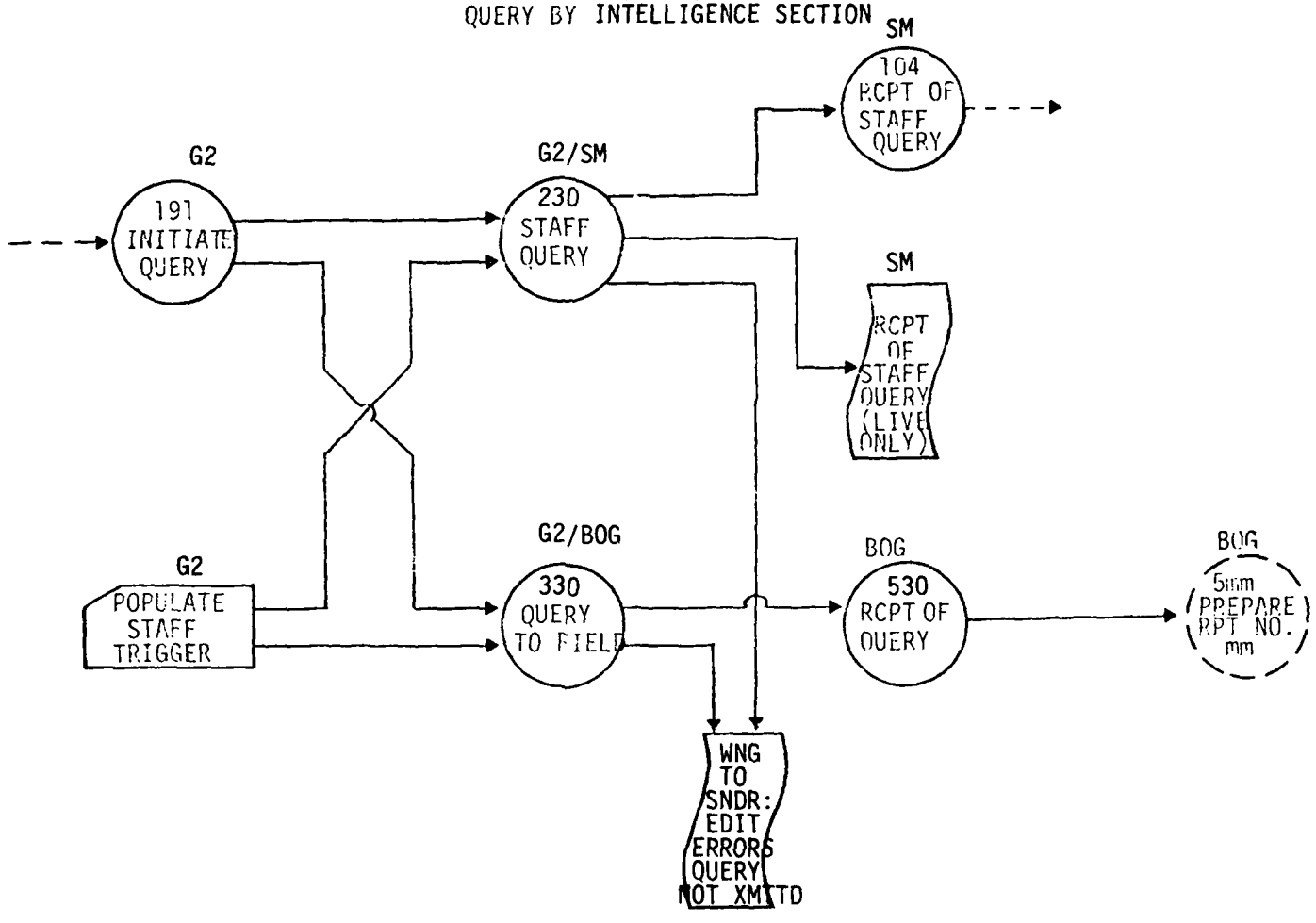
EVENT THREAD CHART # 28D
DEFINING EVENTS 428, 528
FIRE SUPPORT ESTIMATE/ANNEX



EVENT THREAD CHART # 29
DEFINING EVENTS 429, 529
CORPS FRAG ORDER (FS)

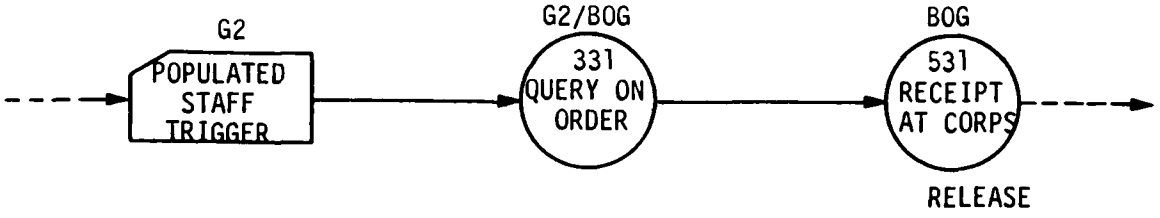


EVENT THREAD CHART # 30
DEFINING EVENTS 104, 191, 230, 330, 530
QUERY BY INTELLIGENCE SECTION

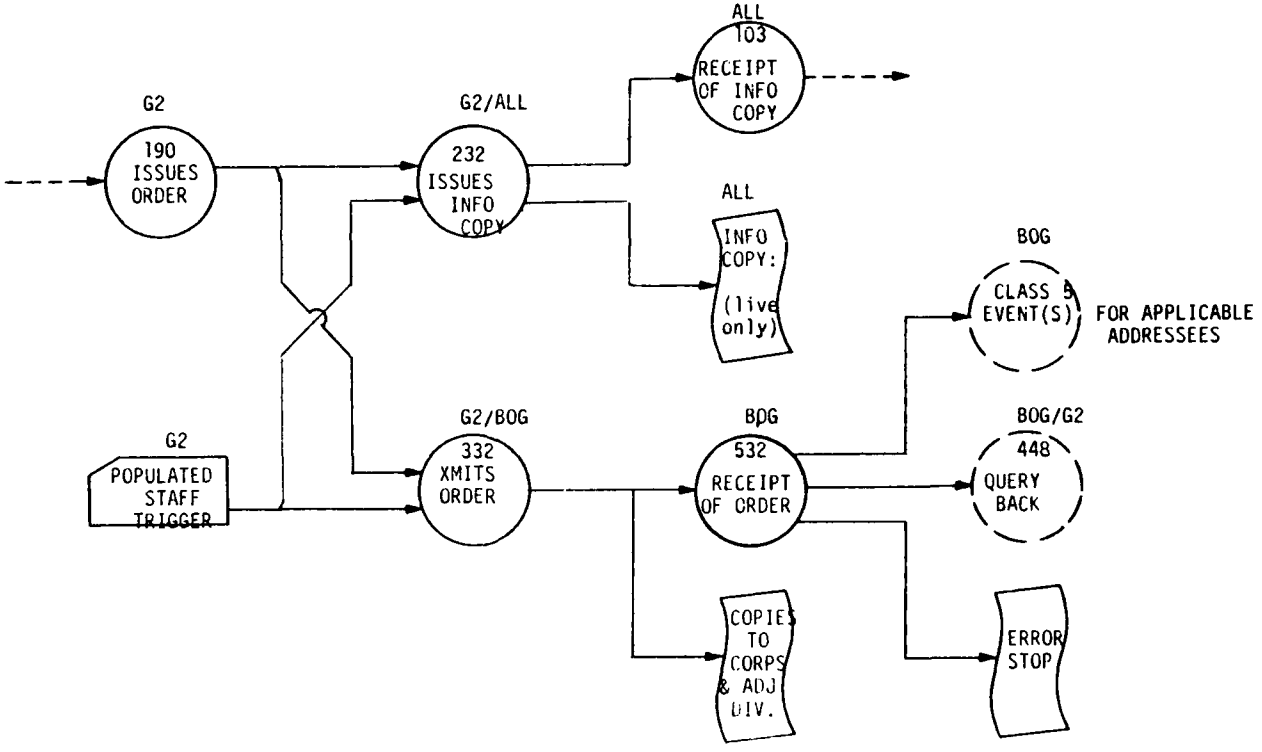


NOTE: SM may be FSE, G3, G1-G4.

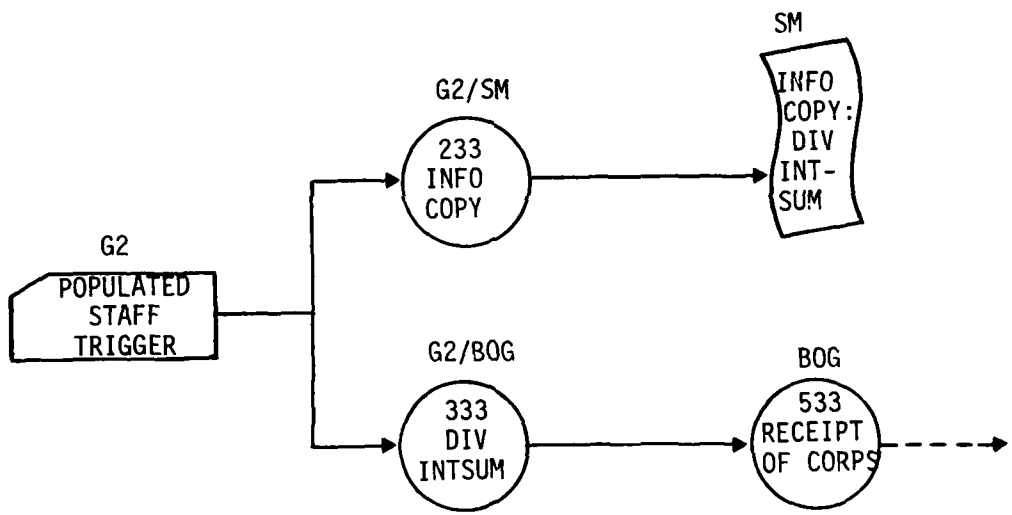
EVENT THREAD CHART #31
DEFINING EVENTS 331, 531
QUERY TO CORPS ON FRAG ORDER (I)



EVENT THREAD CHART #32
DEFINING EVENTS 103, 190, 232, 332, 532
FRAG ORDER (INTELLIGENCE)

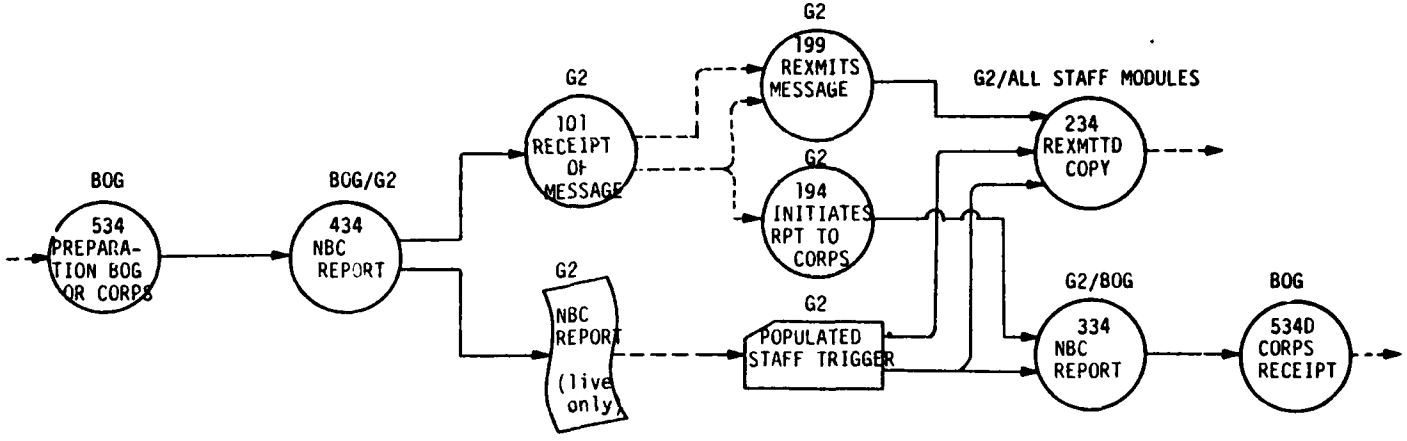


EVENT THREAD CHART #33D
DEFINING EVENTS 233, 333, 533
DIVISION INTELLIGENCE SUMMARY

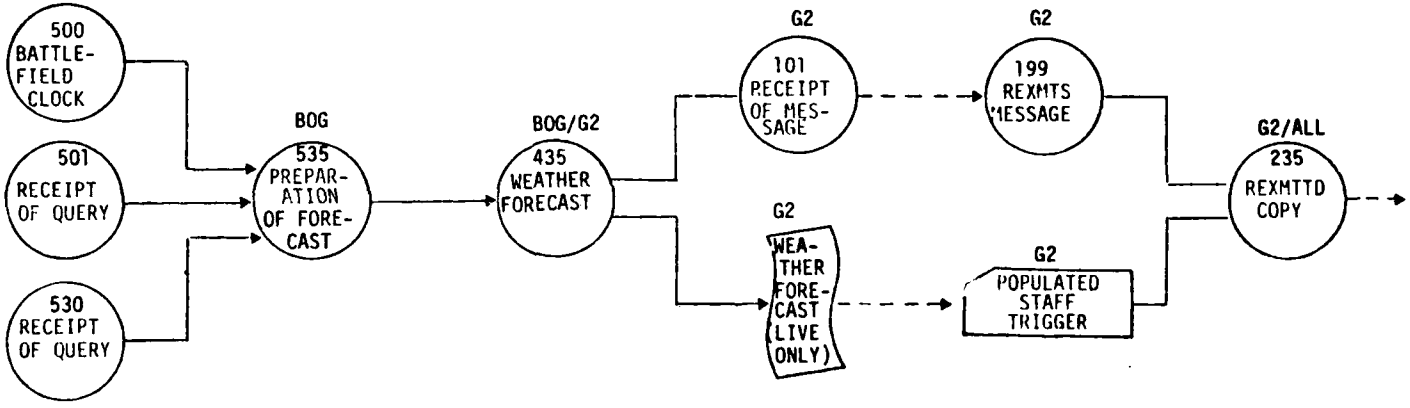


NOTE: SM includes live modules among all other sections.

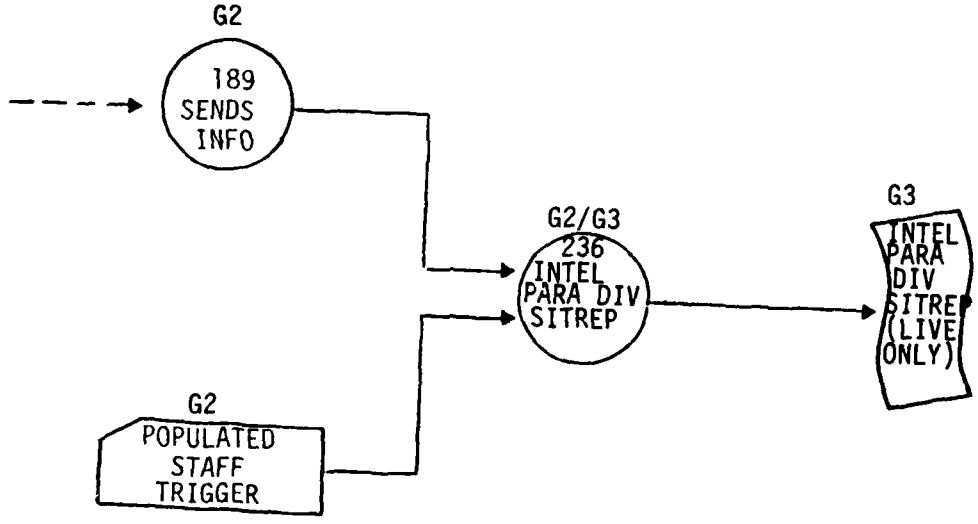
EVENT THREAD CHART #34
DEFINING EVENTS 101, 199, 234, 334, 434, 534, 534D
NUCLEAR, BIOLOGICAL, CHEMICAL REPORT



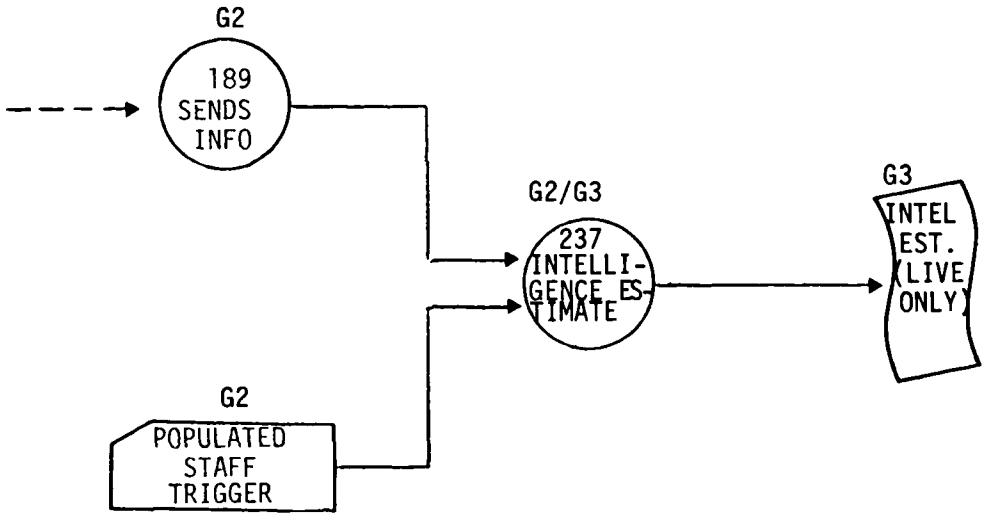
EVENT THREAD CHART #35
DEFINING EVENTS 101, 199, 235, 435, 535
WEATHER FORECAST



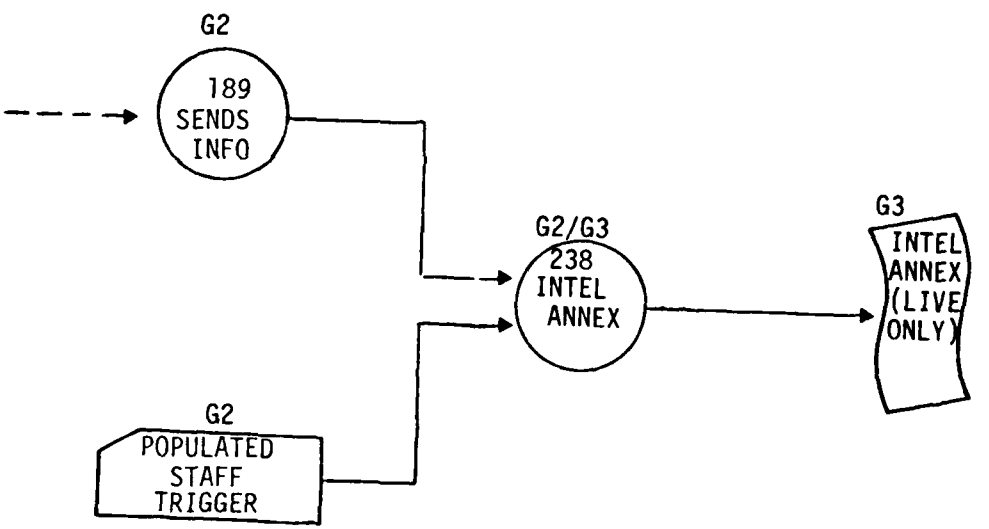
EVENT THREAD CHART # 36D
DEFINING EVENTS 189, 236
INTELLIGENCE PARAGRAPH OF DIVISION SITUATION REPORT



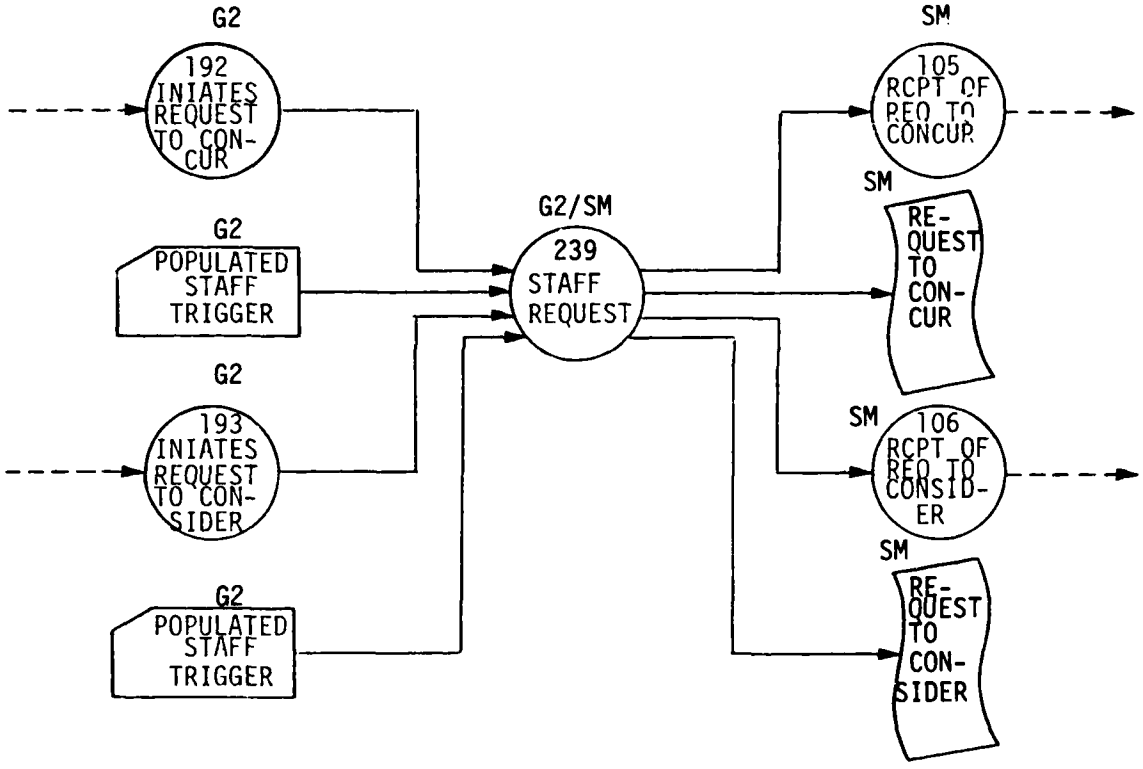
EVENT THREAD CHART # 37D
DEFINING EVENTS 189, 237
INTELLIGENCE ESTIMATE



EVENT THREAD CHART # 38D
DEFINING EVENTS 189, 238
INTELLIGENCE ANNEX

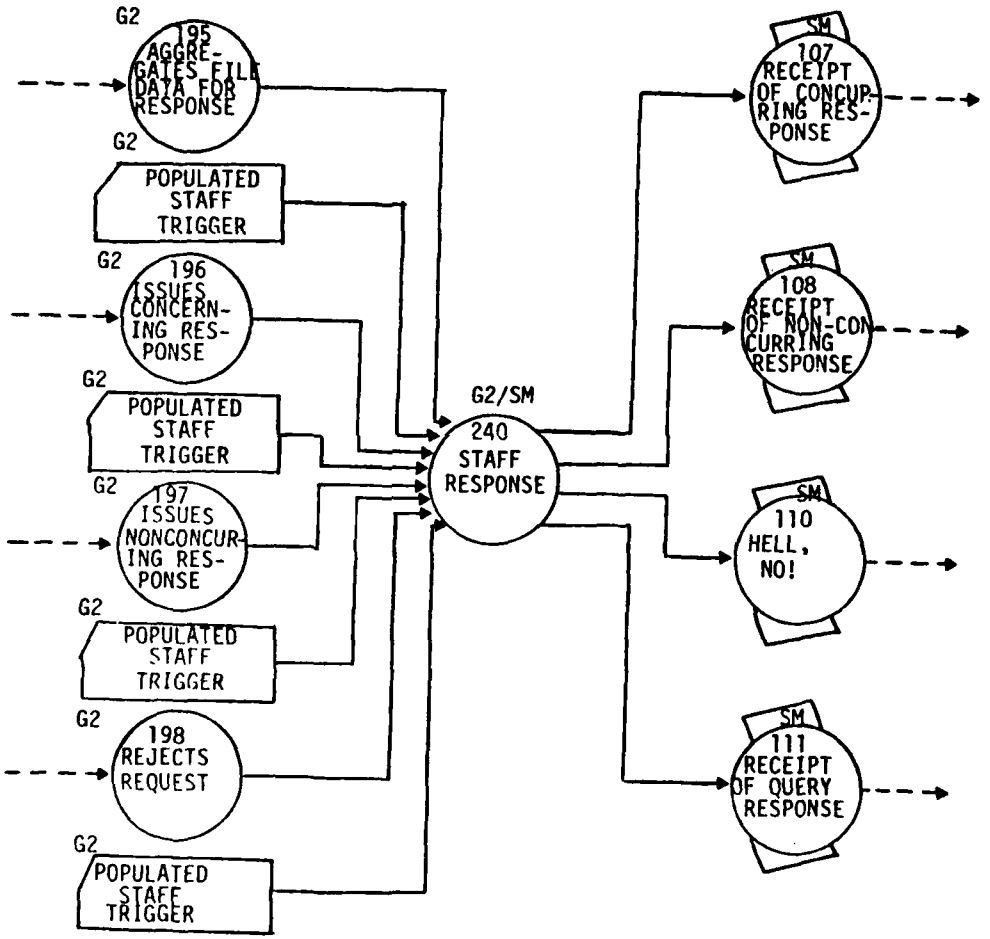


EVENT THREAD CHART # 39
DEFINING EVENTS 105, 106, 192, 193, 239
STAFF REQUEST BY G2



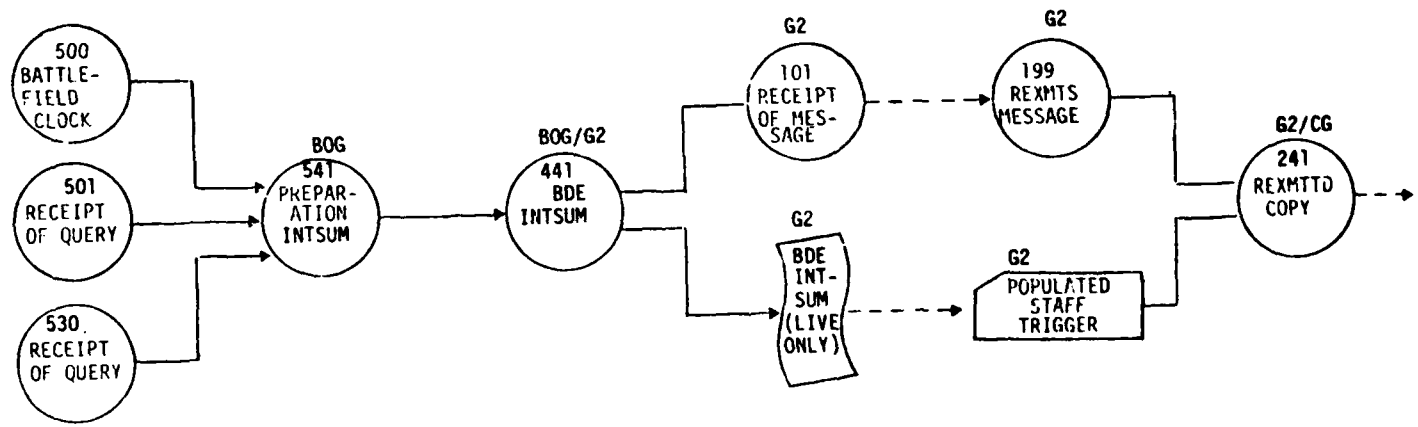
NOTE: SM may be FSE, G3, or G1-G4

EVENT THREAD CHART #40
DEFINING EVENTS 107, 108, 110, 111, 195, 196, 197, 198, 240
STAFF RESPONSE BY G2 SECTION

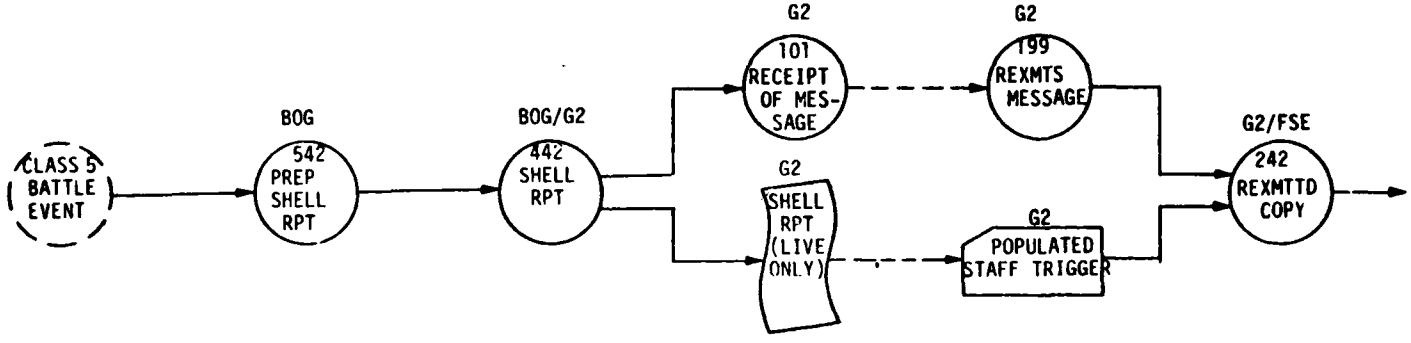


NOTE: SM may be FSE, G3, or G1-G4.

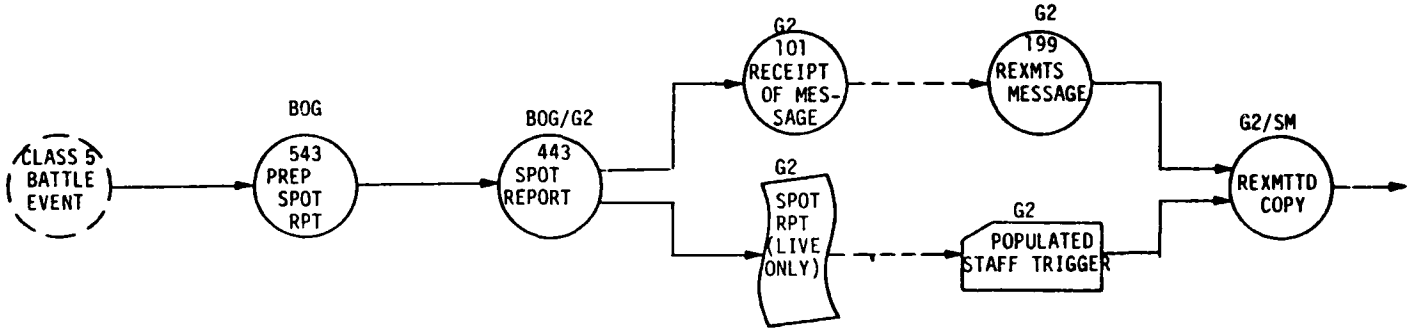
EVENT THREAD CHART #41
DEFINING EVENTS 101, 199, 241, 441, 541
BRIGADE INTELLIGENCE SUMMARY



EVENT THREAD CHART #42
DEFINING EVENTS 101, 199, 242, 442, 542
SHELL REPORT

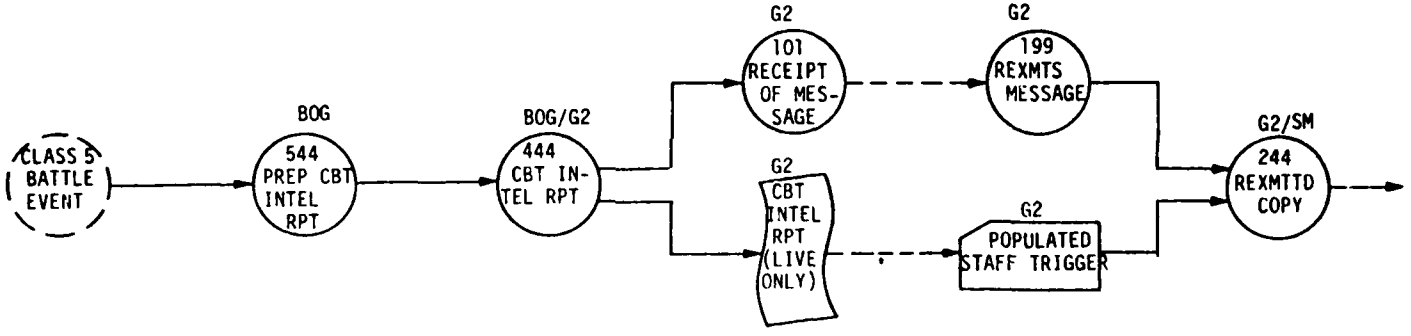


EVENT THREAD CHART #43
DEFINING EVENTS 101, 199, 243, 443, 543
INTELLIGENCE SPOT REPORT



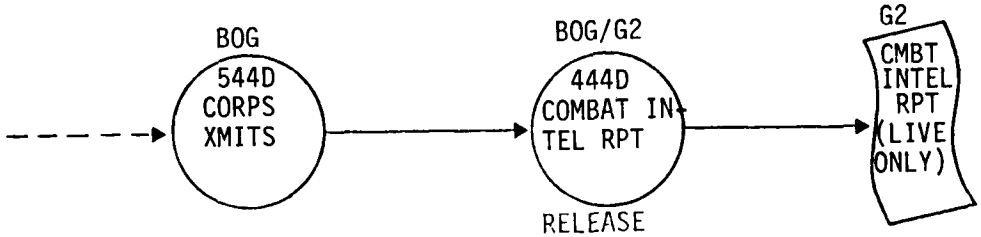
NOTE: SM depends on nature of report.

EVENT THREAD CHART #44
DEFINING EVENTS 101, 199, 244, 444, 544
COMBAT INTELLIGENCE REPORT

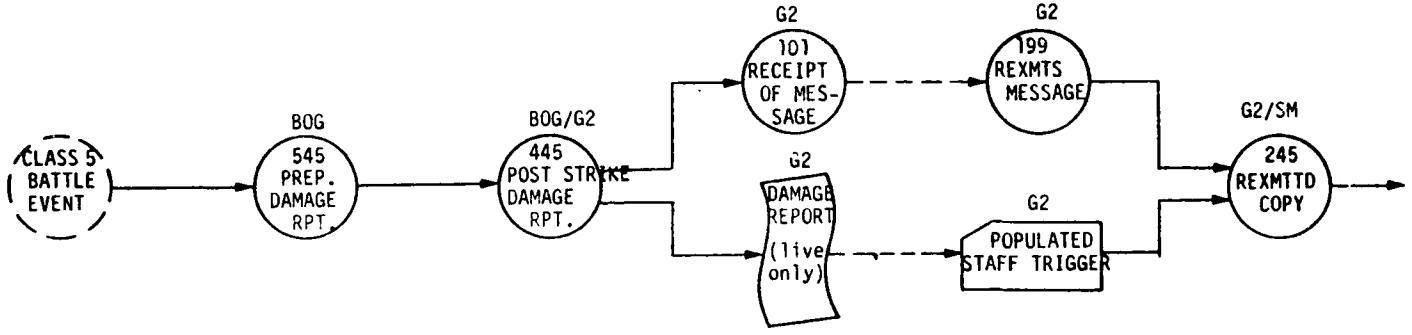


NOTE: SM depends on nature of report.

EVENT THREAD CHART # 44D
DEFINING EVENTS 444D, 544D
COMBAT INTELLIGENCE REPORT FROM CORPS

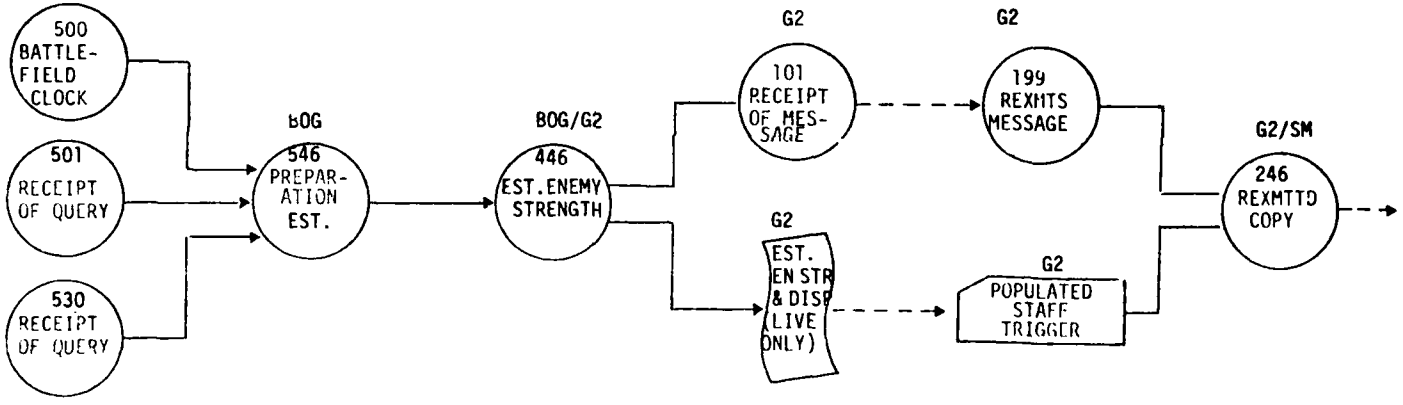


EVENT THREAD CHART #45
DEFINING EVENTS 101, 199, 245, 445, 545
POST STRIKE DAMAGE REPORT



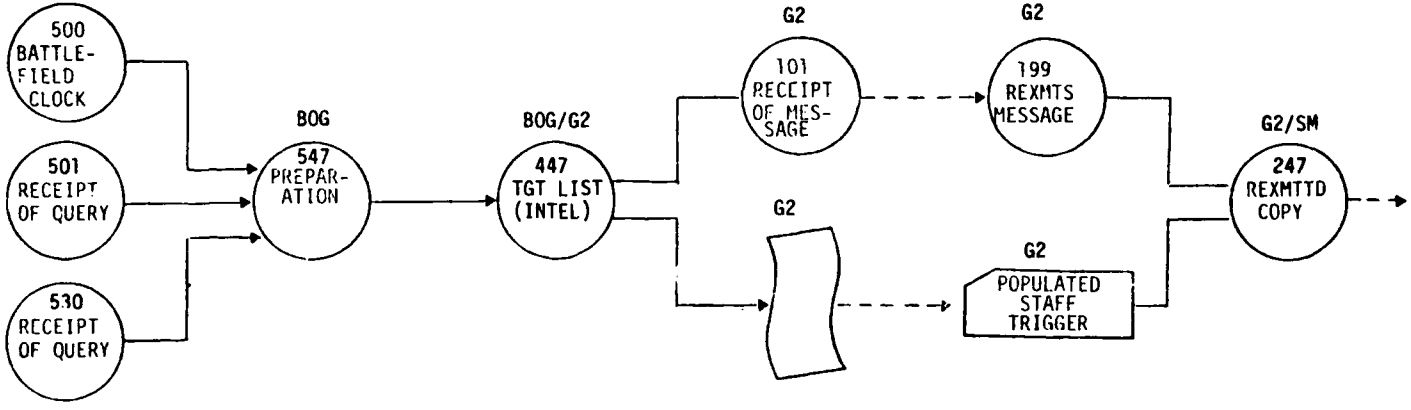
NOTE: SM includes CG, FSE, and G3.

EVENT THREAD CHART #46
DEFINING EVENTS 101, 199, 246, 446, 546
ESTIMATED ENEMY STRENGTH AND DISPOSITIONS



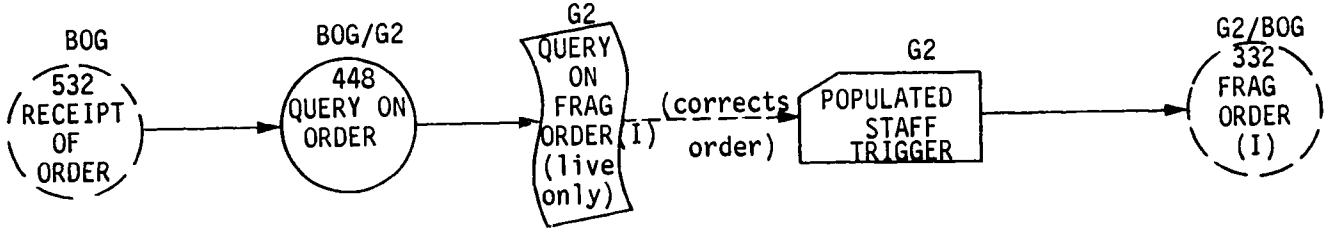
NOTE: SM includes CG, FSE, G3.

EVENT THREAD CHART #47
DEFINING EVENTS 101, 199, 247, 447, 547
AGGREGATED TARGET LIST (INTEL)

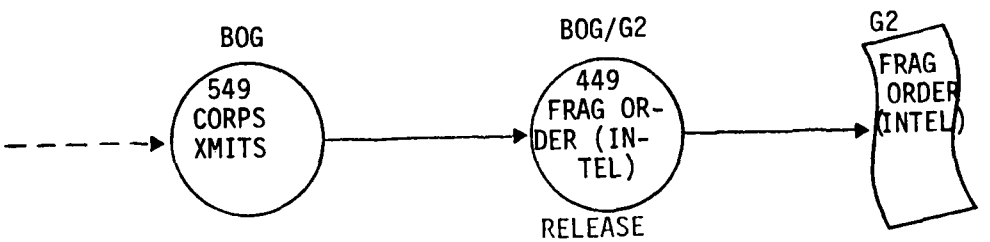


NOTE: SM includes CG, FSE, G3.

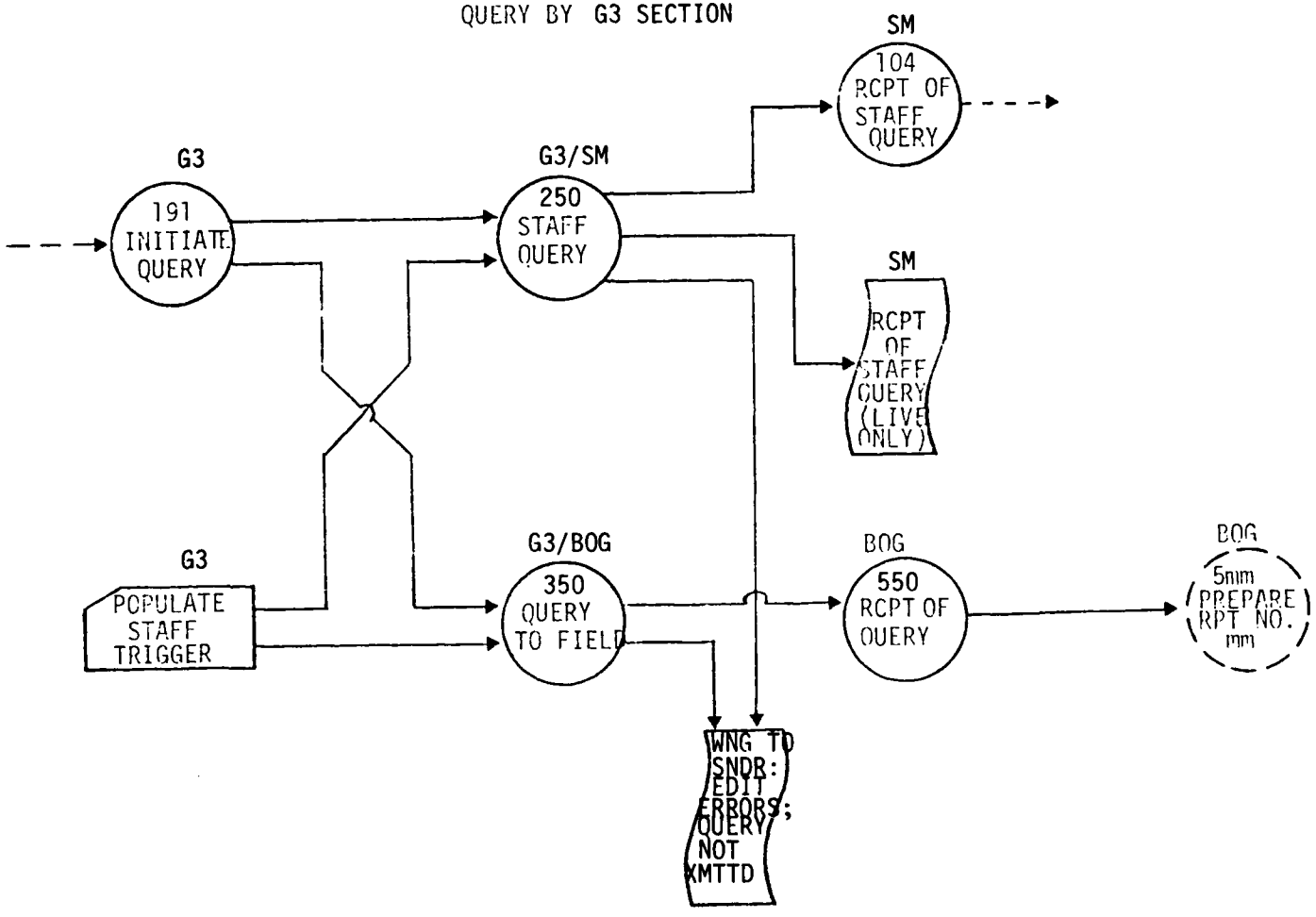
EVENT THREAD CHART #48
DEFINING EVENT 448
QUERY ON ISSUED FRAG ORDER (INTEL)



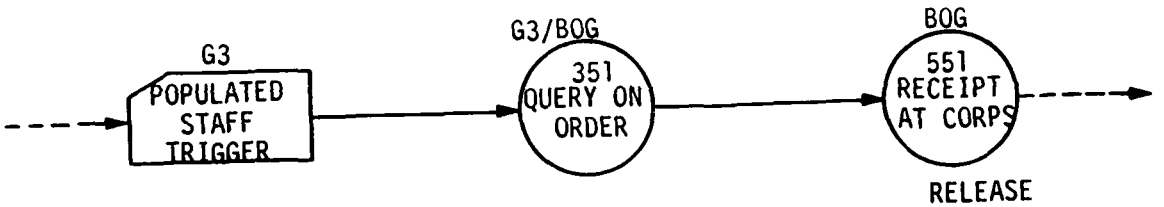
EVENT THREAD CHART # 49D
DEFINING EVENTS 449, 549
CORPS FRAG ORDER (INTEL)



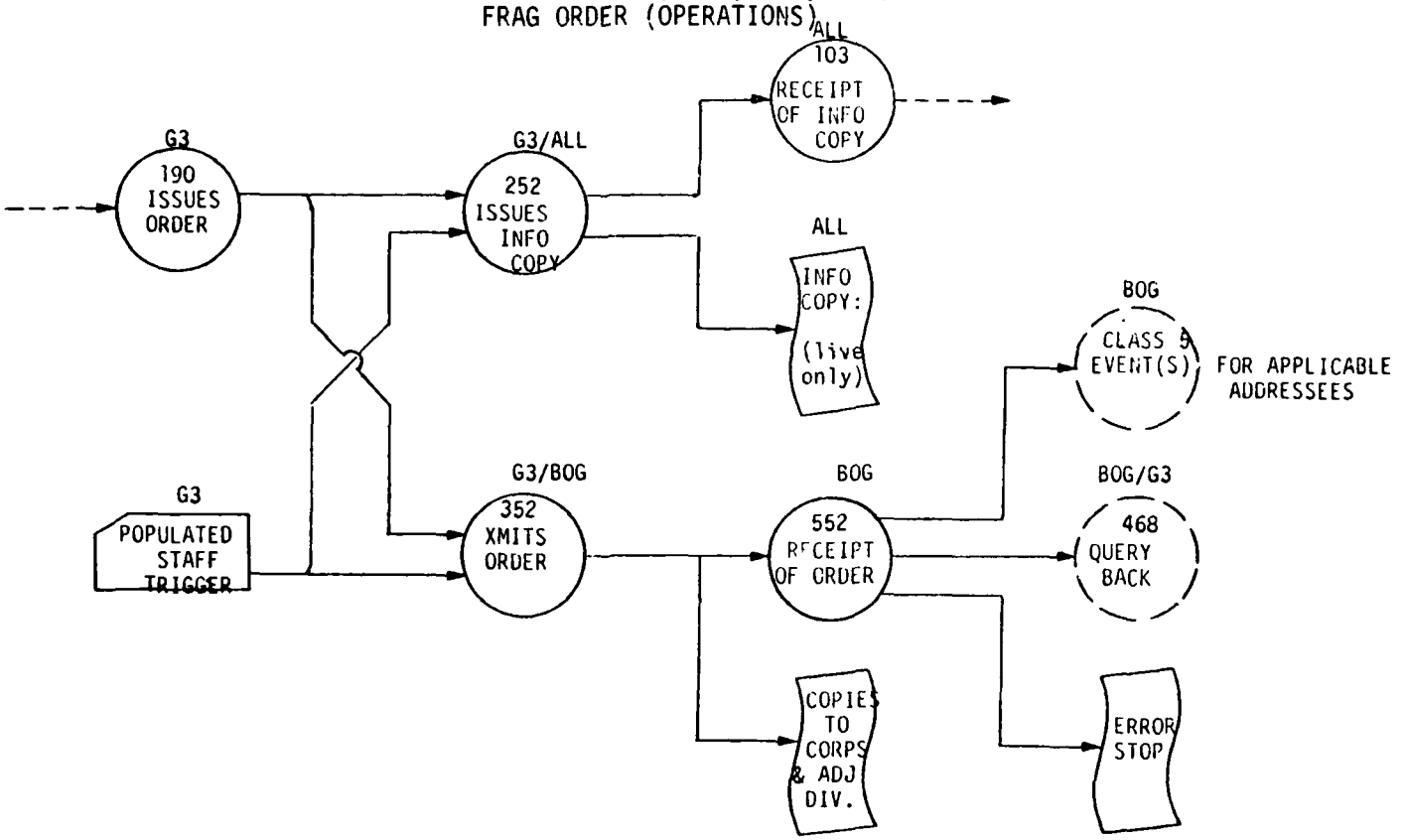
EVENT THREAD CHART # 50
DEFINING EVENTS 104, 191, 250, 350, 550
QUERY BY G3 SECTION



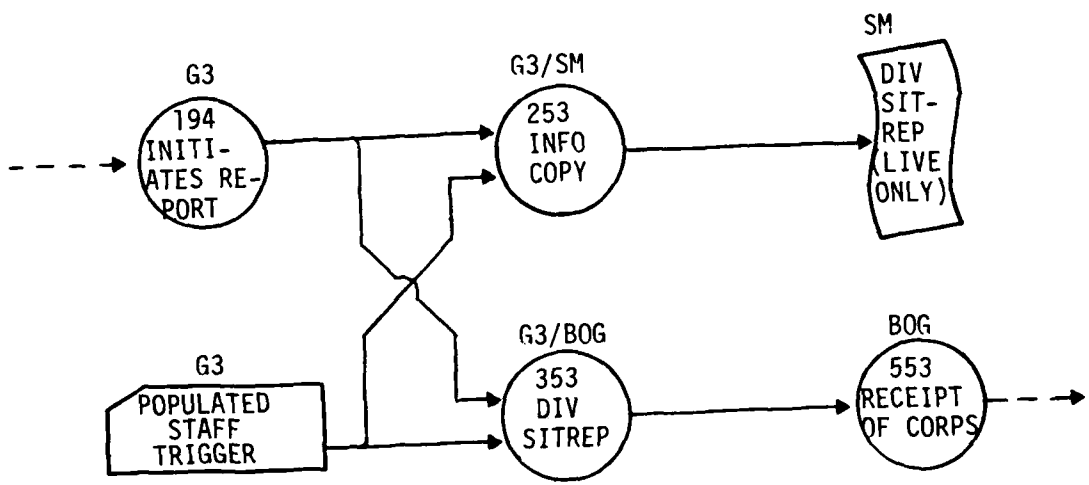
EVENT THREAD CHART #51D
DEFINING EVENTS 351, 551
QUERY TO CORPS ON FRAG ORDER (OPS)



EVENT THREAD CHART #52
DEFINING EVENTS 103, 190, 252, 352, 552
FRAG ORDER (OPERATIONS)

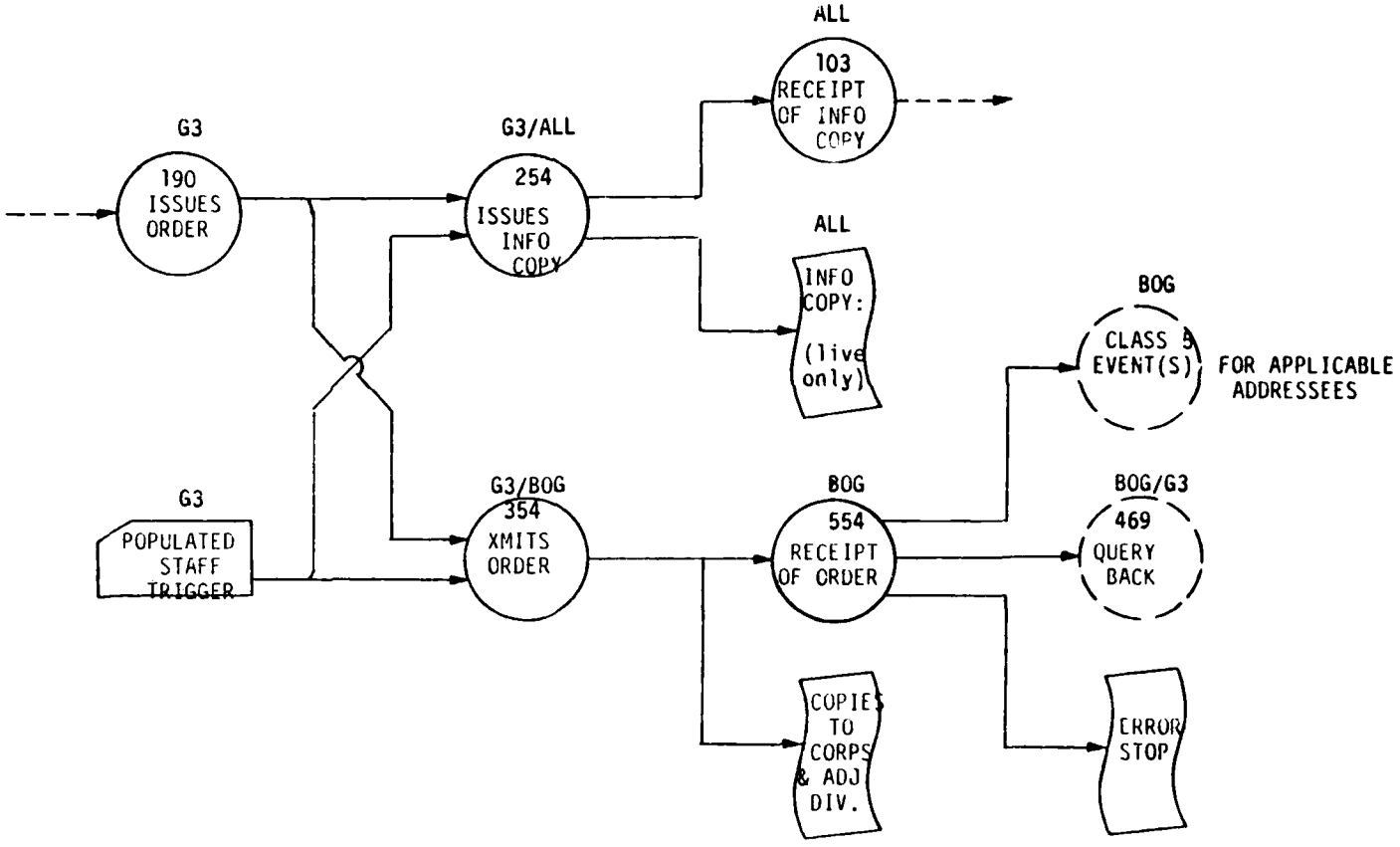


EVENT THREAD CHART #53D
DEFINING EVENTS 194, 253, 353, 553
DIVISION SITUATION REPORT

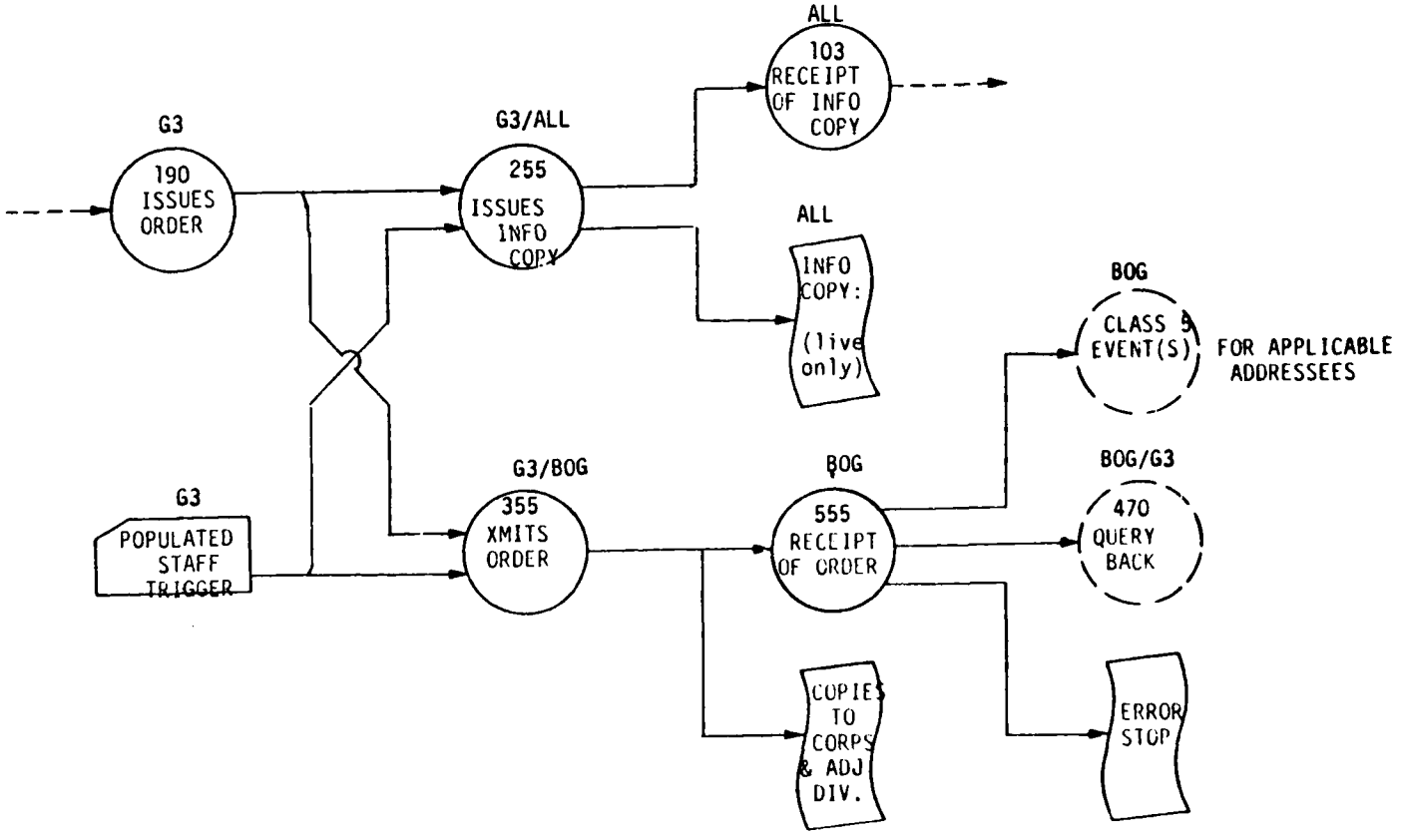


NOTE: SM includes all live staff modules.

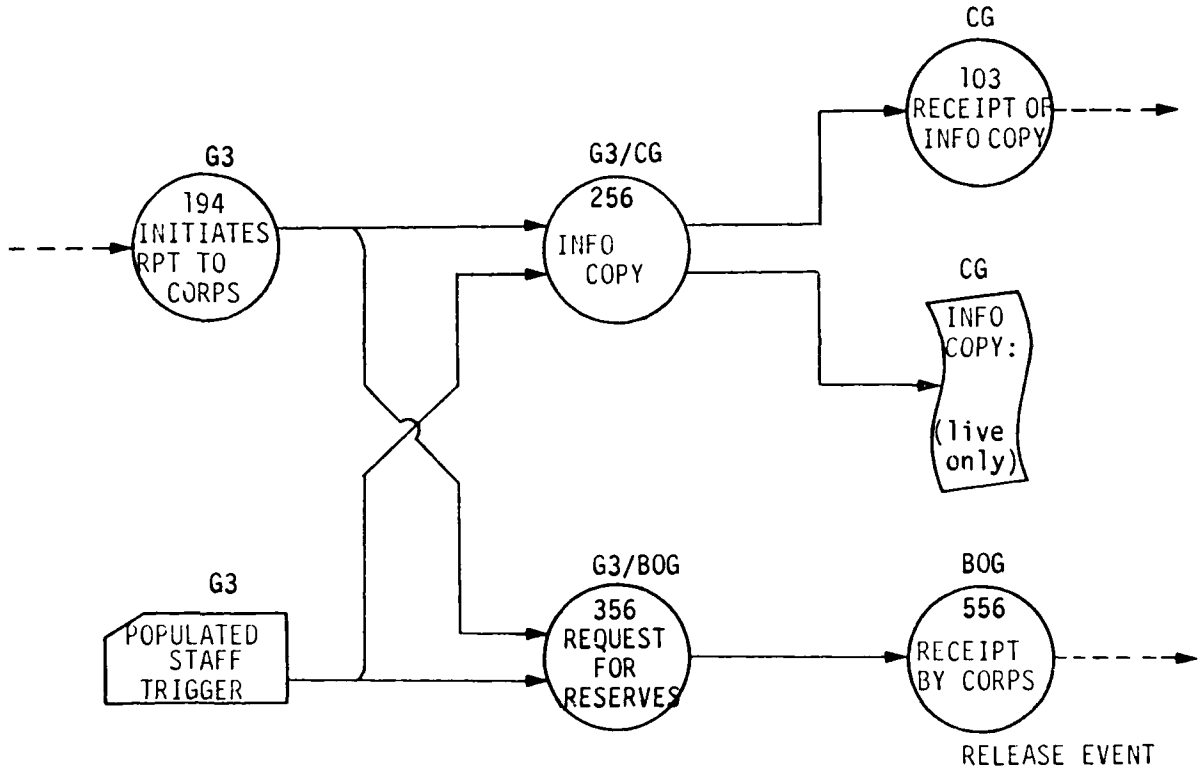
EVENT THREAD CHART #54
DEFINING EVENTS 103, 190, 254, 354, 554
ISSUANCE OF NUCLEAR WARNING ORDER



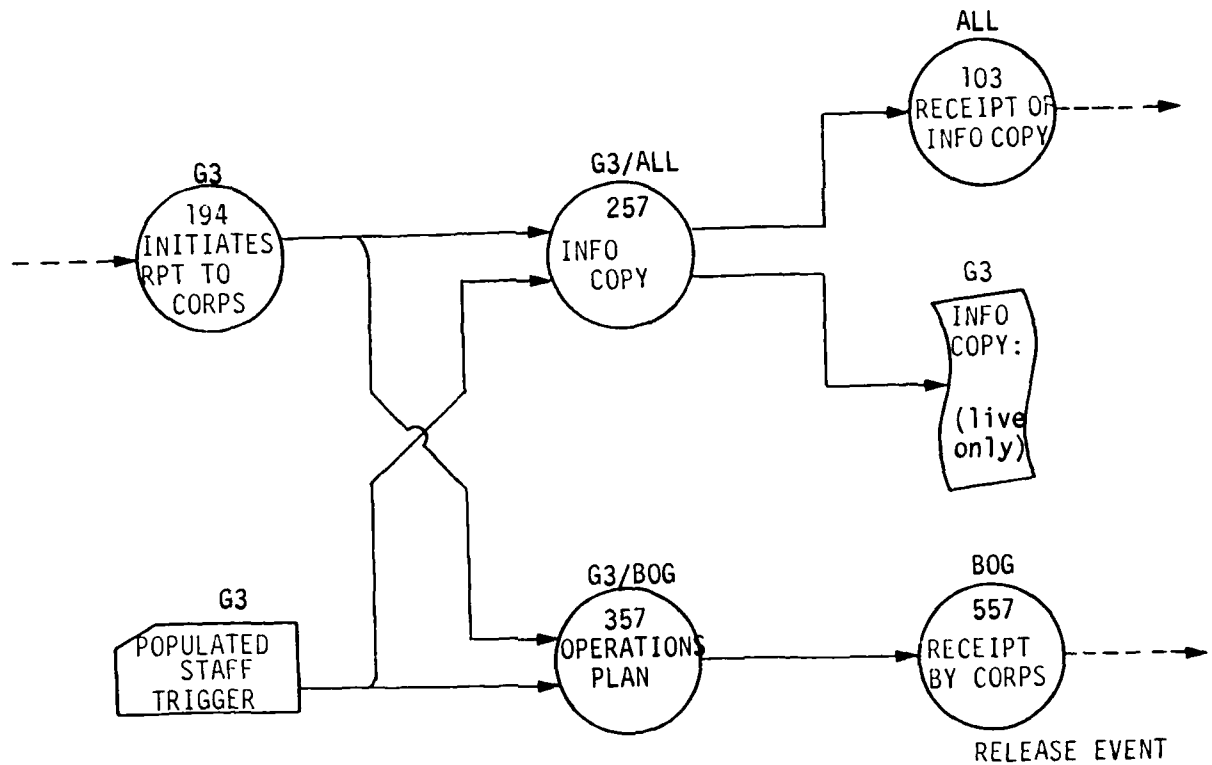
EVENT THREAD CHART #55
DEFINING EVENTS 103, 190, 255, 355, 555
ISSUANCE OF AIR DEFENSE WARNING ORDER



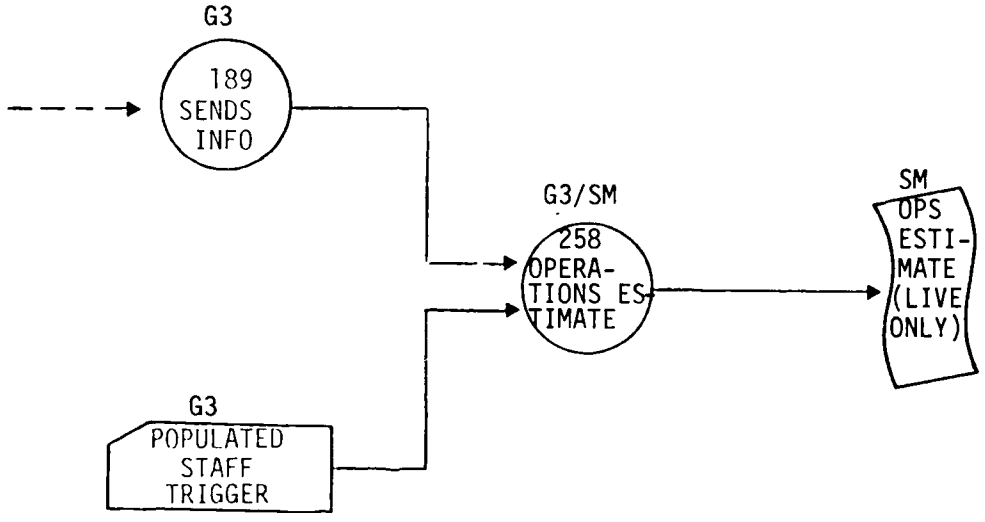
EVENT THREAD CHART #56
DEFINING EVENTS 103, 194, 256, 356, 556
REQUEST FOR RESERVES



EVENT THREAD CHART #57
DEFINING EVENTS 103, 194, 257, 357, 557
OPERATIONS PLAN

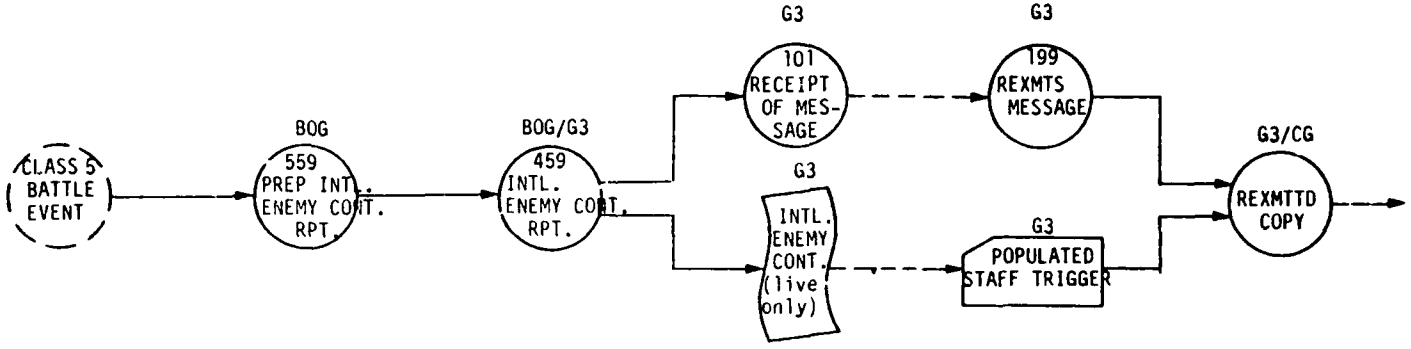


EVENT THREAD CHART # 58
DEFINING EVENTS 189, 189, 258
OPERATIONS ESTIMATE

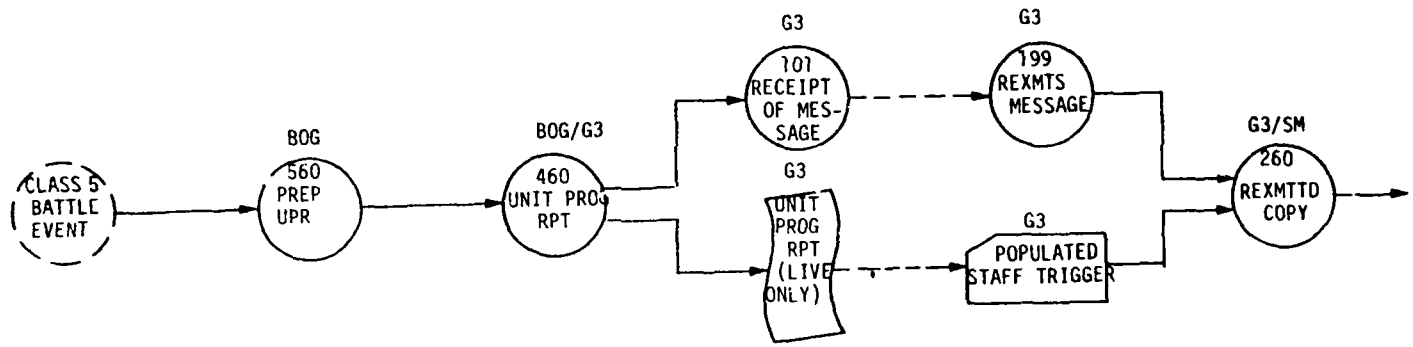


NOTE: SM inlucdes all live staff modules.

EVENT THREAD CHART #59
DEFINING EVENTS 101, 199, 259, 459, 559
INITIAL ENEMY CONTACT REPORT

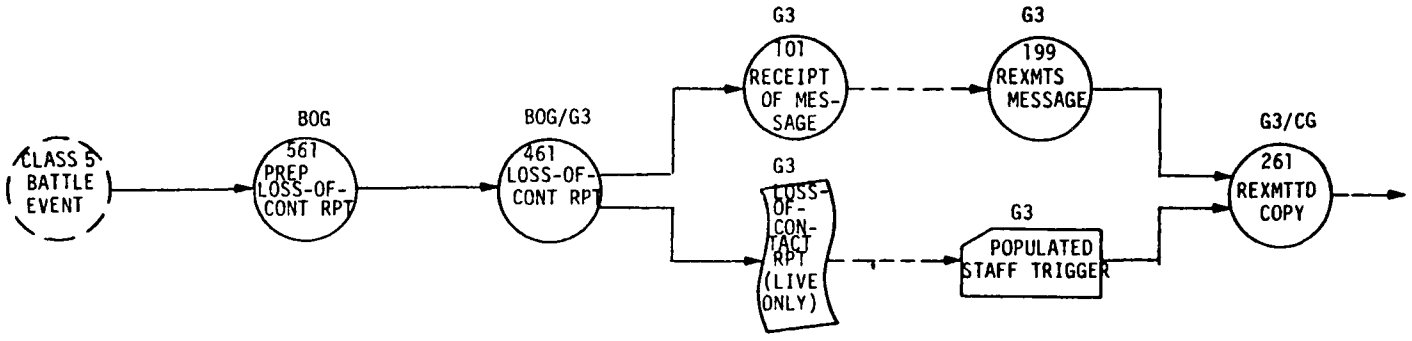


EVENT THREAD CHART #60
DEFINING EVENTS 101, 199, 260, 460, 560
UNIT PROGRESS REPORT

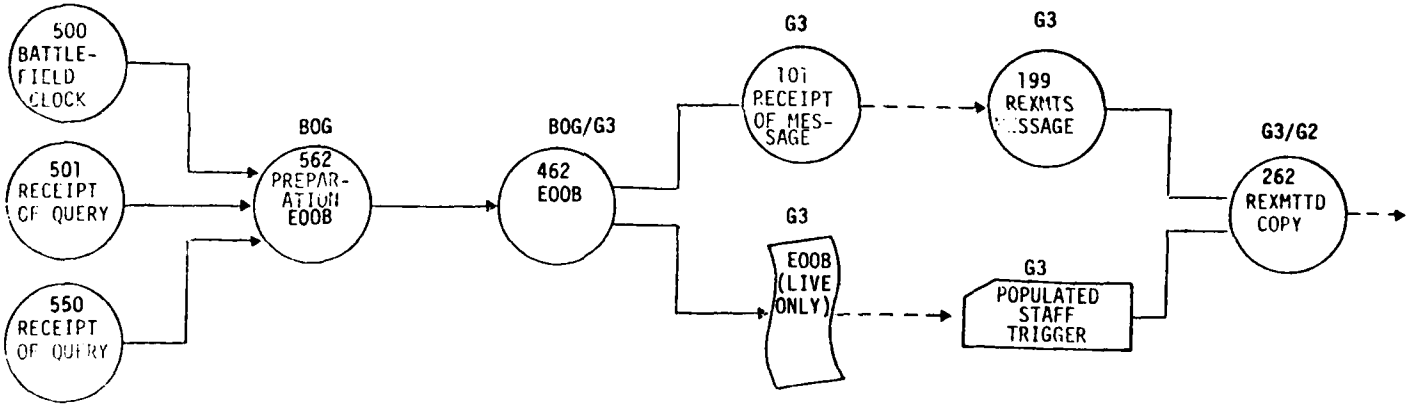


NOTE: SM depends on nature of report.

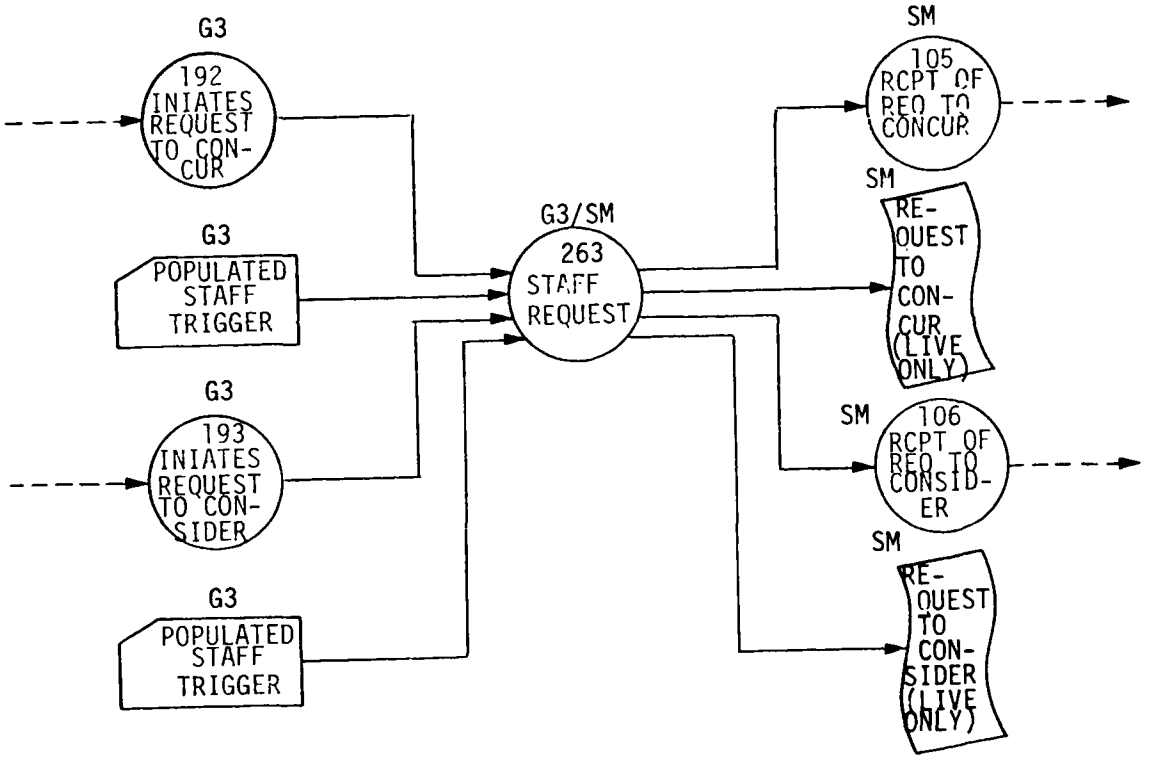
EVENT THREAD CHART #61
DEFINING EVENTS 101, 199, 261, 461, 561
LOSS-OF-CONTACT WITH FRIENDLY UNIT REPORT



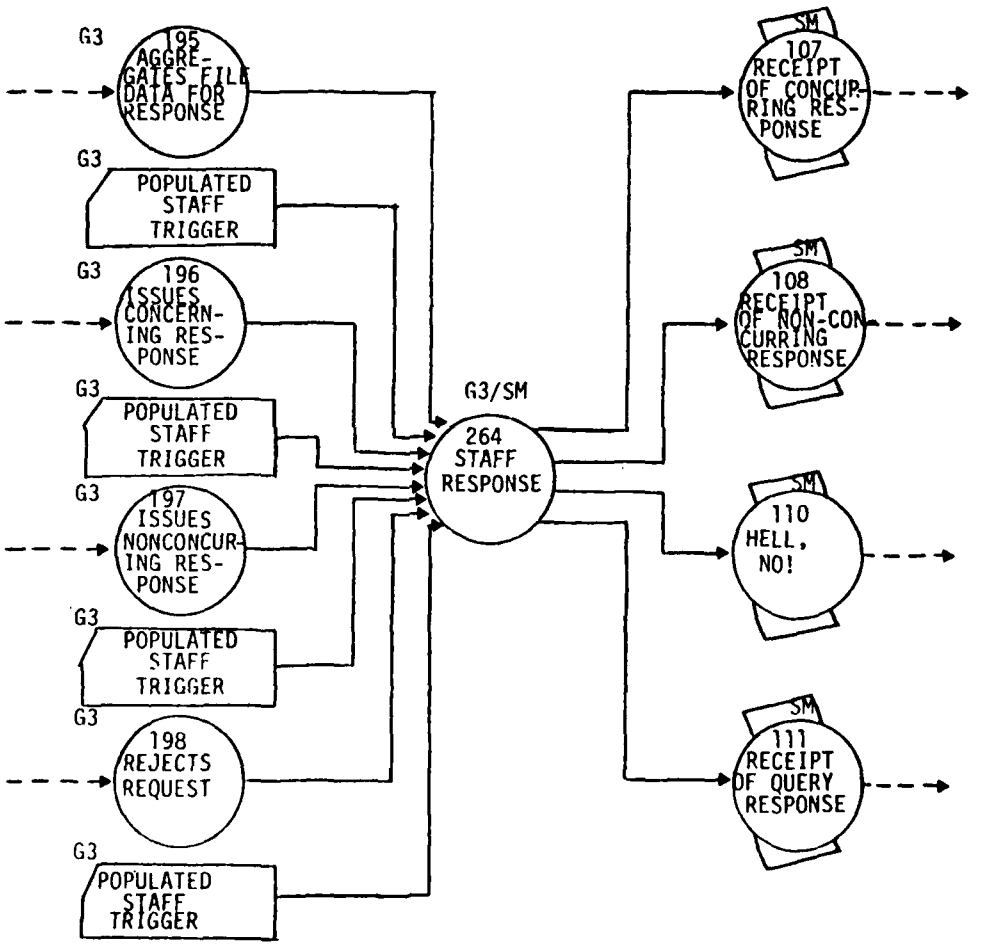
EVENT THREAD CHART #62
DEFINING EVENTS 101, 199, 262, 462, 562
ENEMY ELECTRONIC ORDER OF BATTLE



EVENT THREAD CHART # 63
DEFINING EVENTS 105, 106, 192, 193, 263
STAFF REQUEST BY OPERATIONS

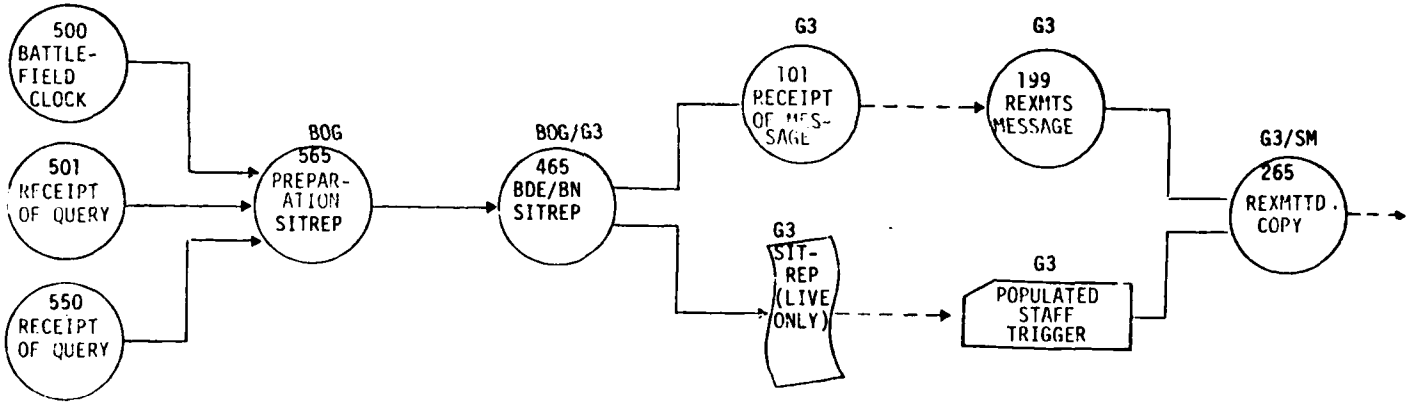


EVENT THREAD CHART #64
DEFINING EVENTS 107, 108, 110, 111, 195, 196, 197, 198, 264
STAFF RESPONSE BY G3 SECTION



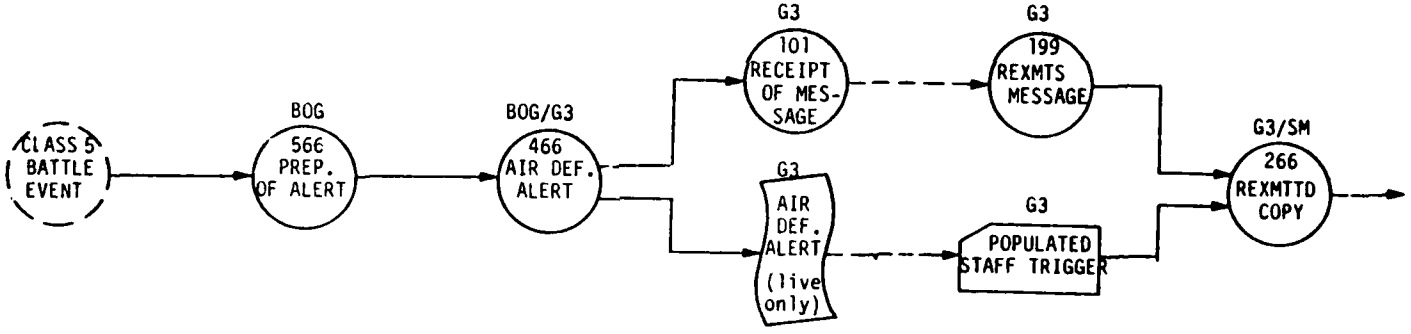
NOTE: SM may be FSE, G2, G1/G4.

EVENT THREAD CHART #65
DEFINING EVENTS 101, 199, 265, 465, 565
BRIGADE/BATTALION SITUATION REPORT

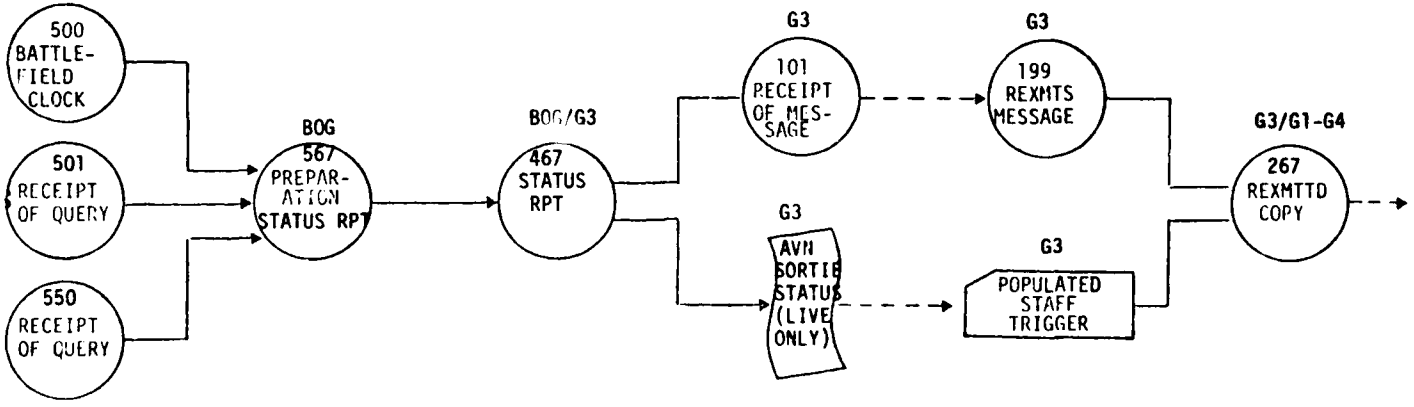


NOTE: SM depends on nature of report.

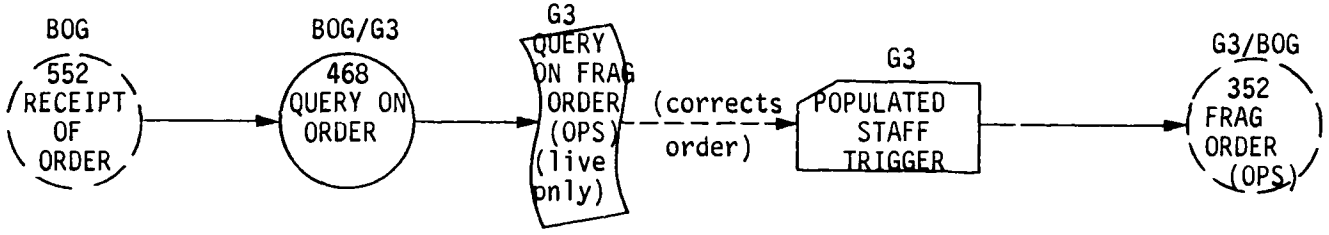
EVENT THREAD CHART #66
DEFINING EVENTS 101, 199, 266, 466, 566
AIR DEFENSE ALERT



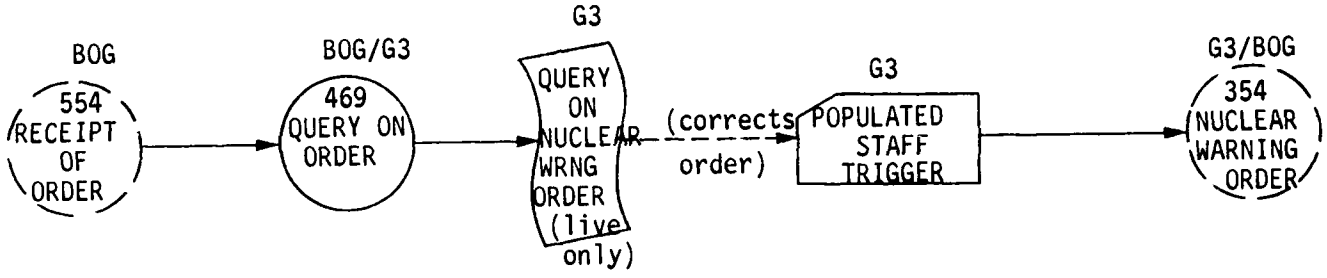
EVENT THREAD CHART #67
DEFINING EVENTS 101, 199, 267, 467, 567
ORGANIC AVIATION SORTIE STATUS REPORT



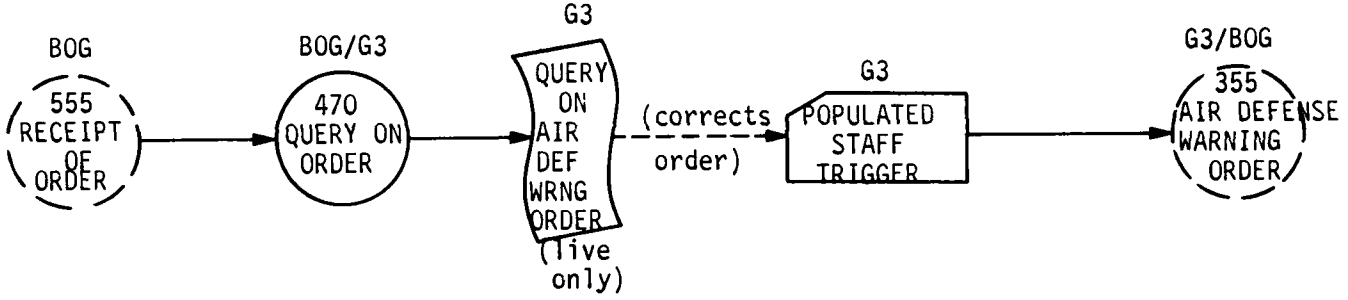
EVENT THREAD CHART #68
DEFINING EVENT 468
QUERY ON ISSUED FRAG ORDER (OPS)



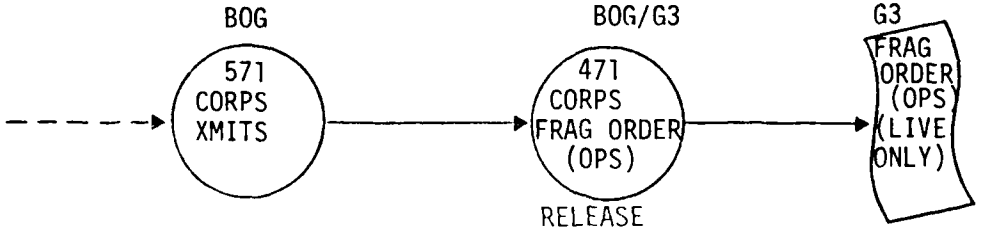
EVENT THREAD CHART #69
DEFINING EVENT 469
QUERY ON ISSUED NUCLEAR WARNING ORDER



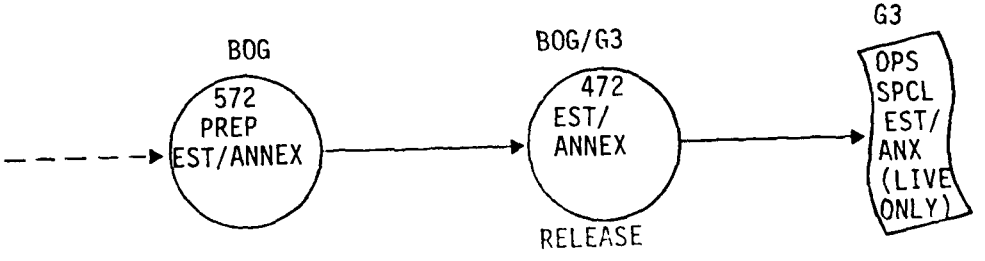
EVENT THREAD CHART #70
DEFINING EVENT 470
QUERY ON ISSUED AIR DEFENSE WARNING ORDER



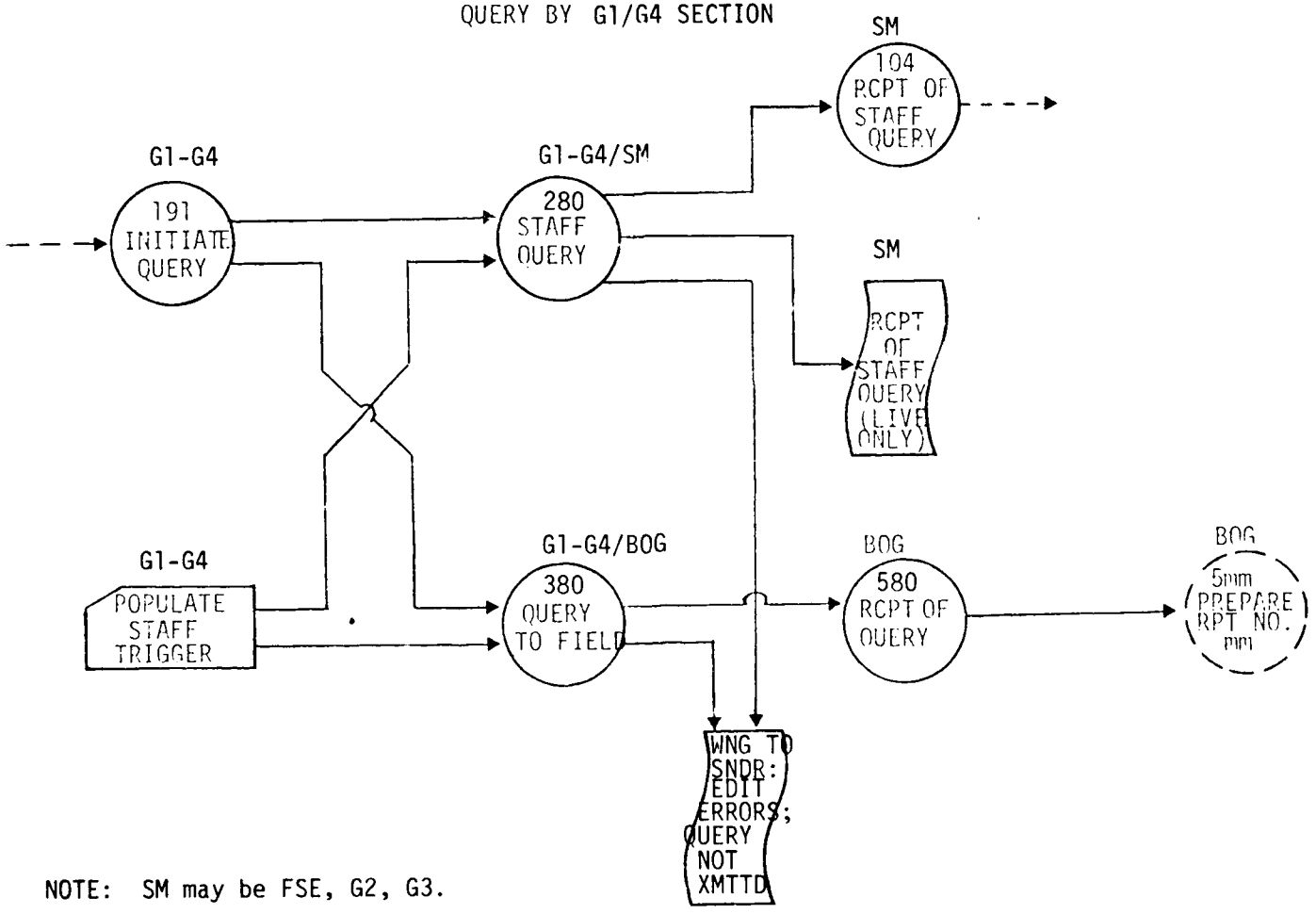
EVENT THREAD CHART # 71D
DEFINING EVENTS 471, 571
CORPS FRAG ORDER (OPS)



EVENT THREAD CHART #72D
DEFINING EVENTS 472, 572
OPERATIONS SPECIAL ESTIMATES/ANNEX

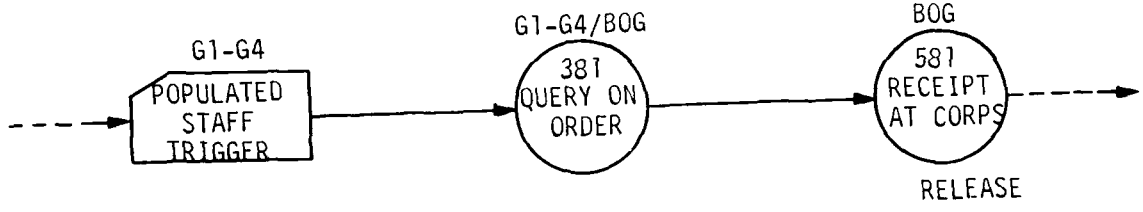


EVENT THREAD CHART #80
DEFINING EVENTS 104, 191, 280, 380, 580
QUERY BY G1/G4 SECTION

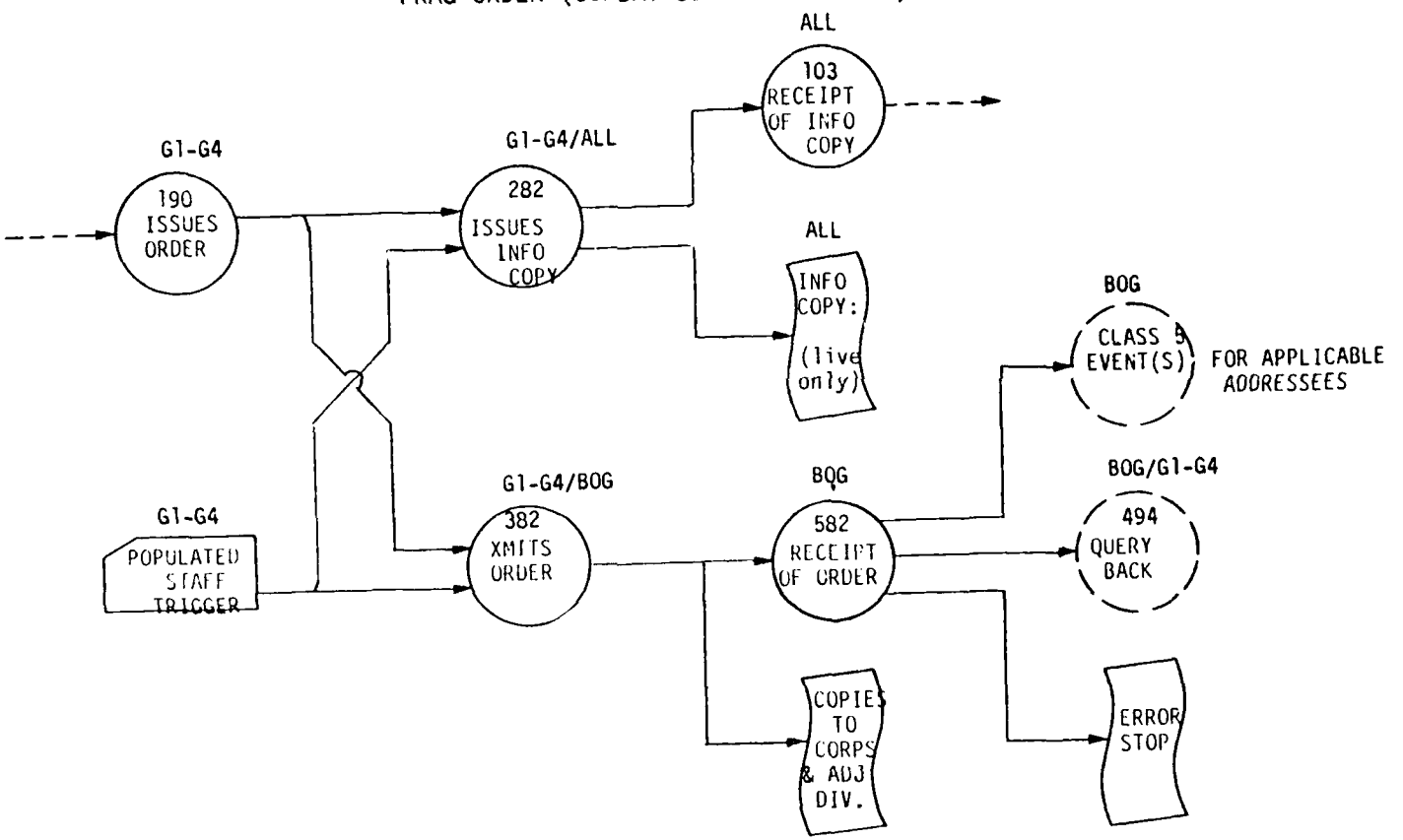


NOTE: SM may be FSE, G2, G3.

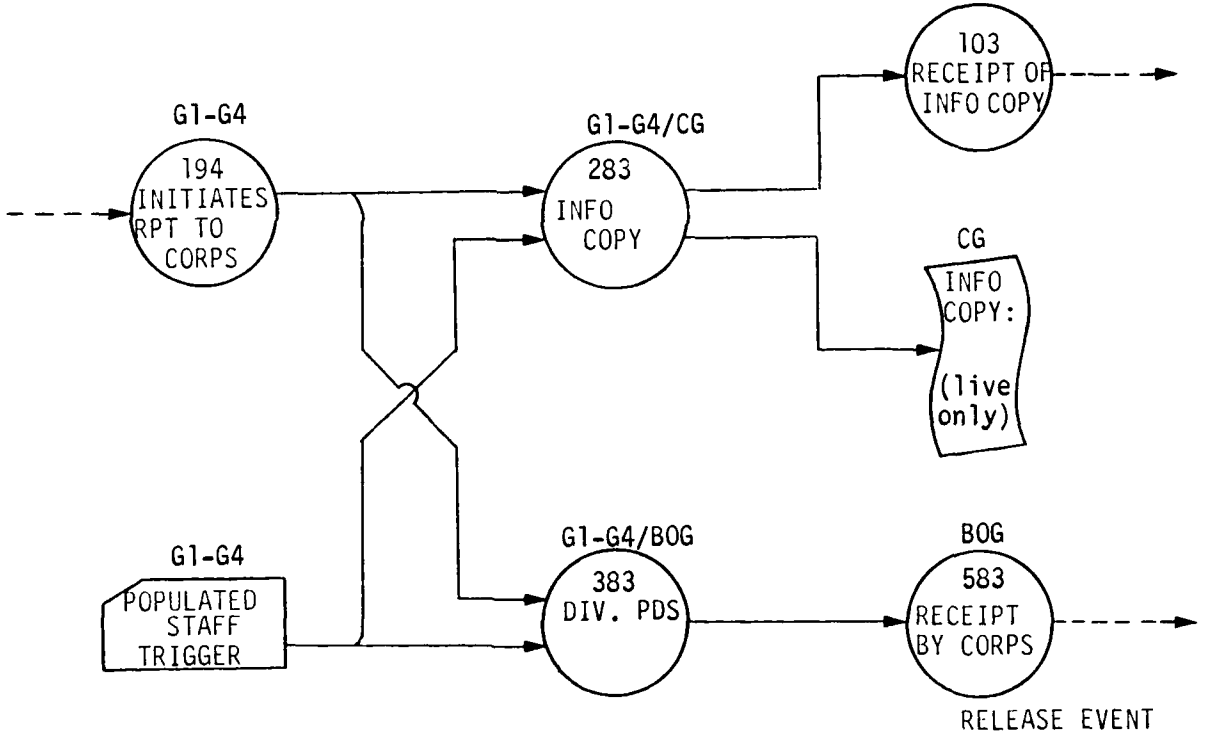
EVENT THREAD CHART #81
DEFINING EVENTS 381, 581
QUERY TO CORPS ON FRAG ORDER (CSS)



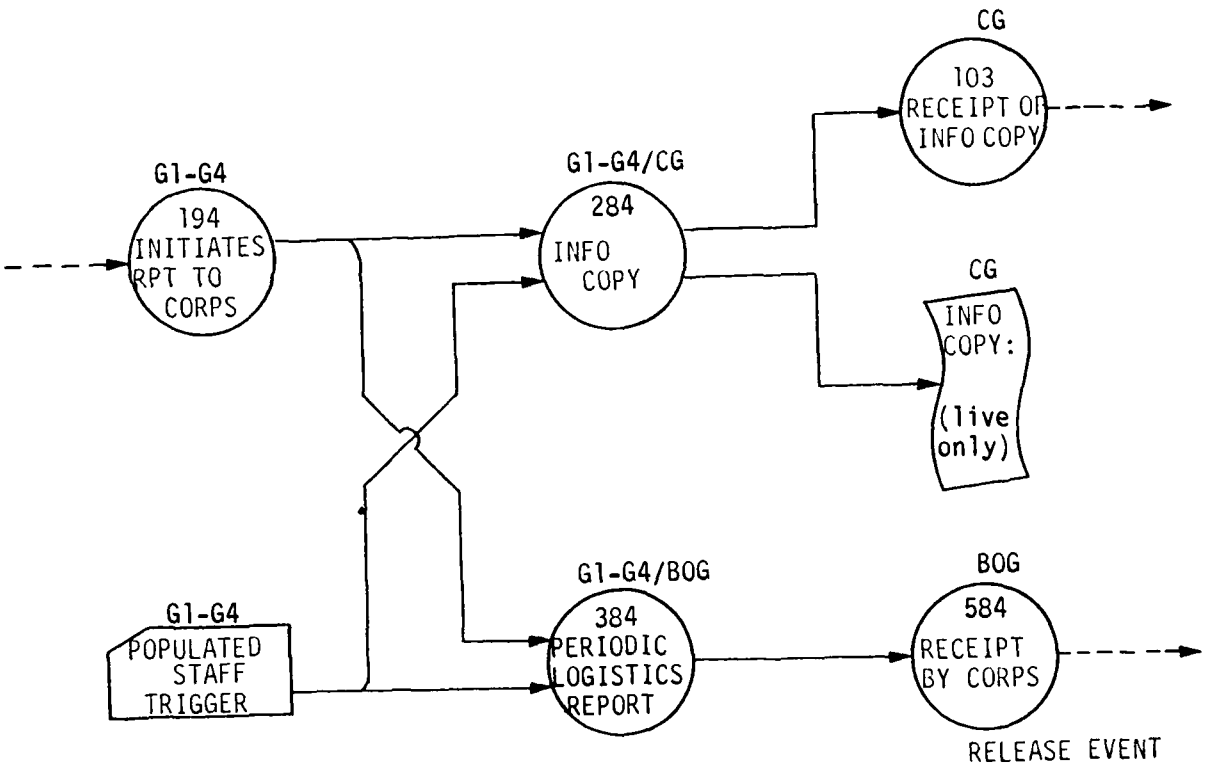
EVENT THREAD CHART #82
DEFINING EVENTS 103, 190, 282, 382, 582
FRAG ORDER (COMBAT SERVICE SUPPORT)



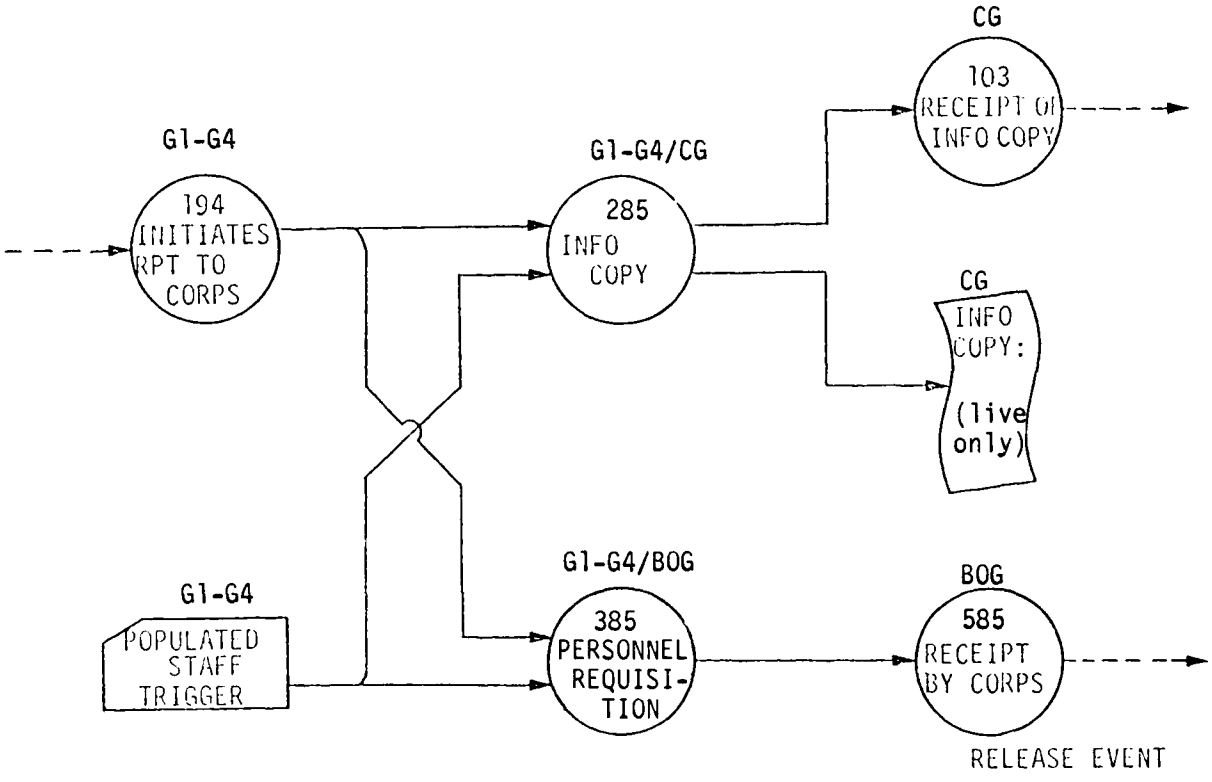
EVENT THREAD CHART #83D
DEFINING EVENTS 103, 194, 283, 383, 583
DIVISION PERSONNEL DAILY SUMMARY



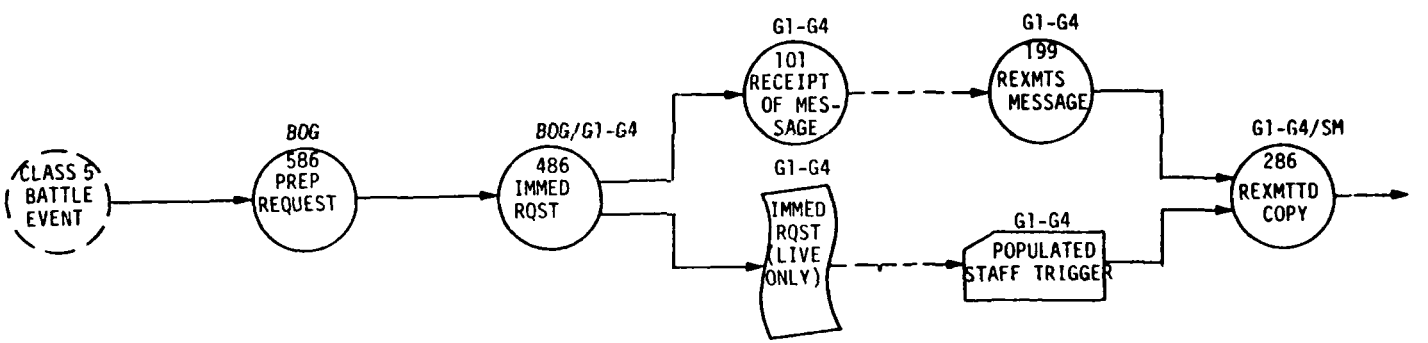
EVENT THREAD CHART #84D
DEFINING EVENTS 103, 194, 284, 384, 584
PERIODIC LOGISTICS REPORT



EVENT THREAD CHART #85D
DEFINING EVENTS 103, 194, 285, 385, 585
PERSONNEL REQUISITION

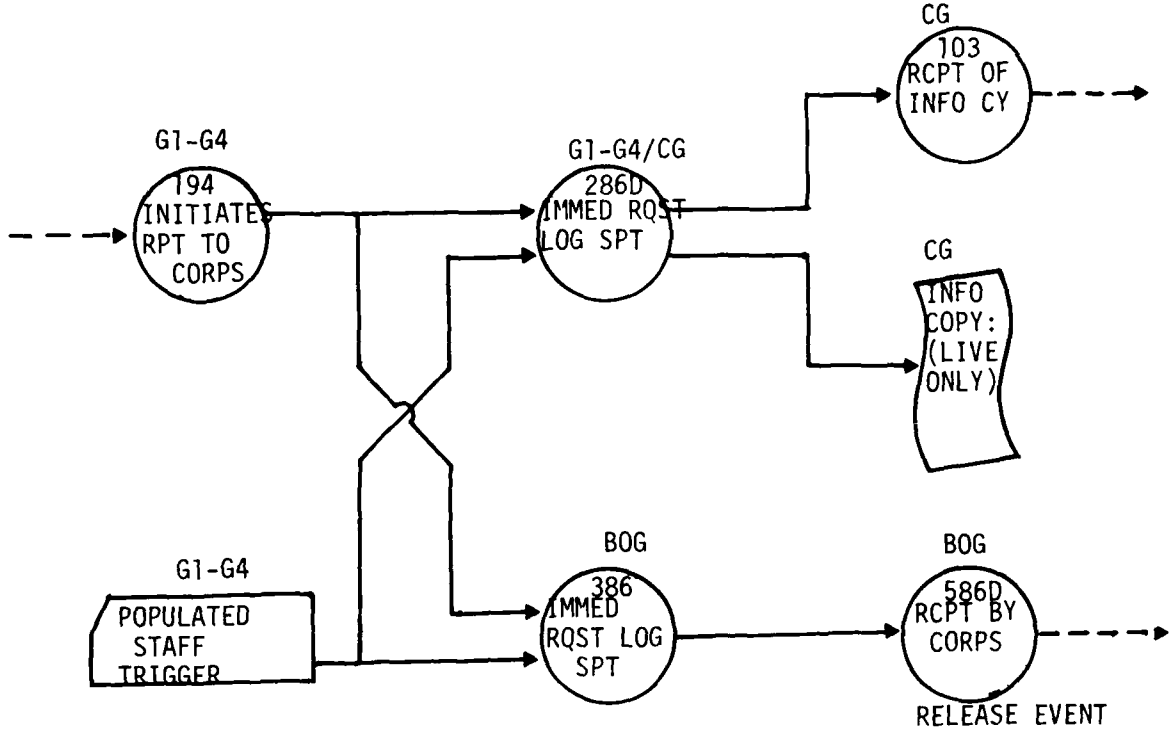


EVENT THREAD CHART #86
DEFINING EVENTS 101, 199, 286, 486, 586
IMMEDIATE REQUEST FOR LOGISTIC SUPPORT

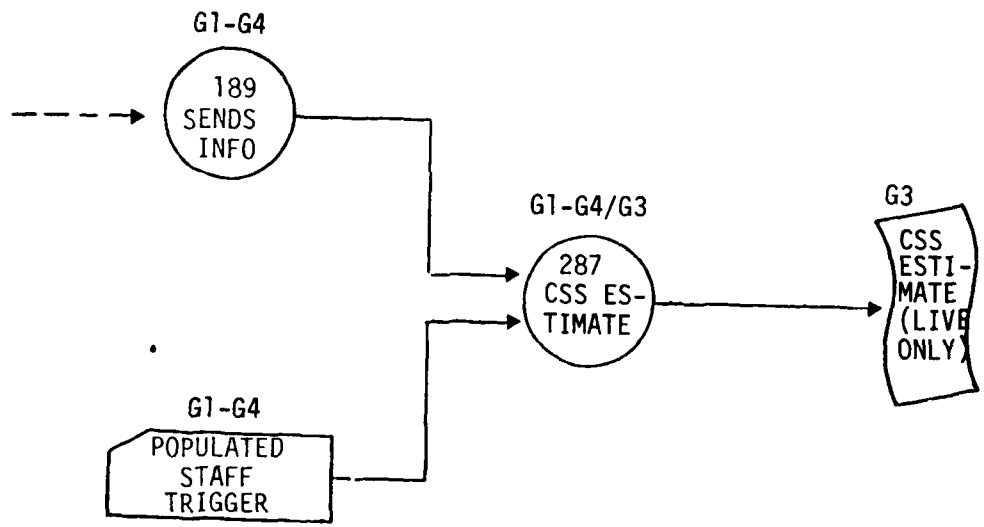


NOTE: SM depends on nature of request.

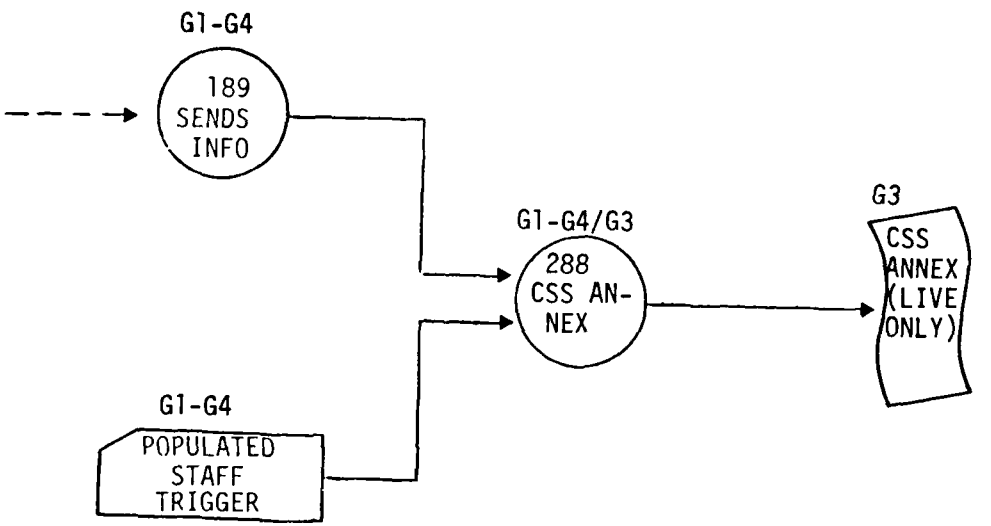
EVENT THREAD CHART #86D
DEFINING EVENTS 103, 194, 286D, 386, 586D
IMMEDIATE REQUEST TO CORPS FOR LOGISTICAL SUPPORT



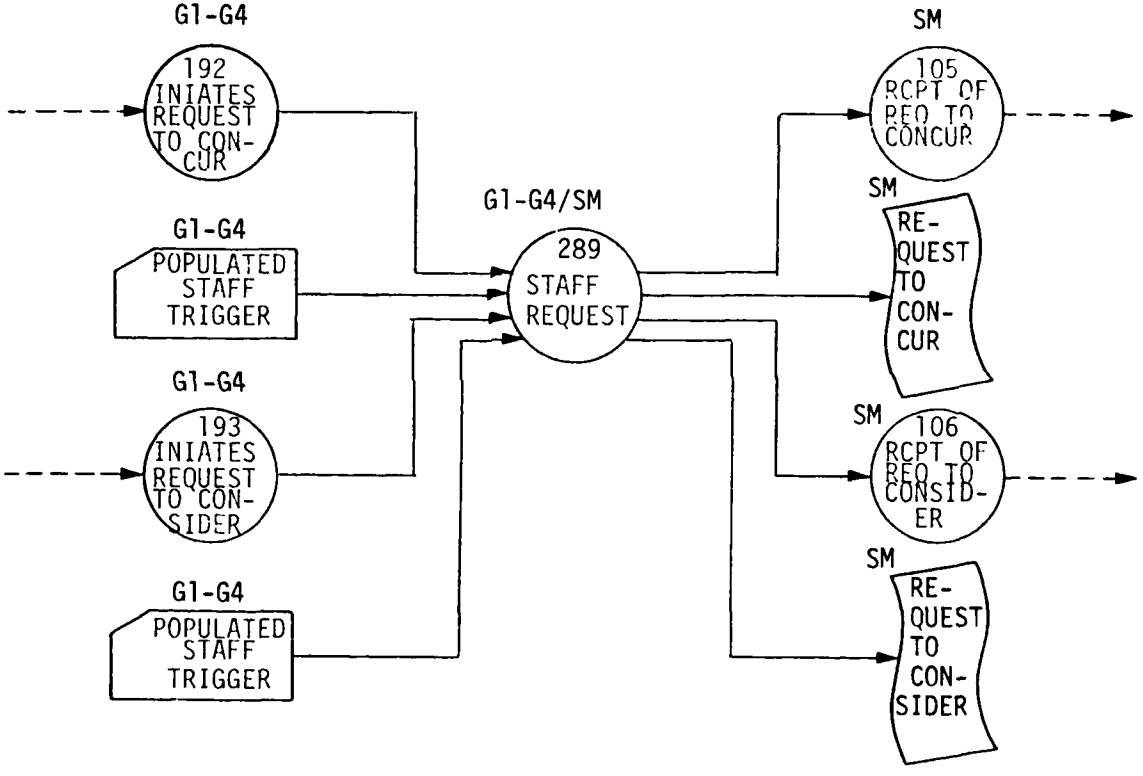
EVENT THREAD CHART # 87D
DEFINING EVENTS 189, 287
COMBAT SERVICE SUPPORT ESTIMATE



EVENT THREAD CHART # 88D
DEFINING EVENTS 189, 288
COMBAT SERVICE SUPPORT ANNEX

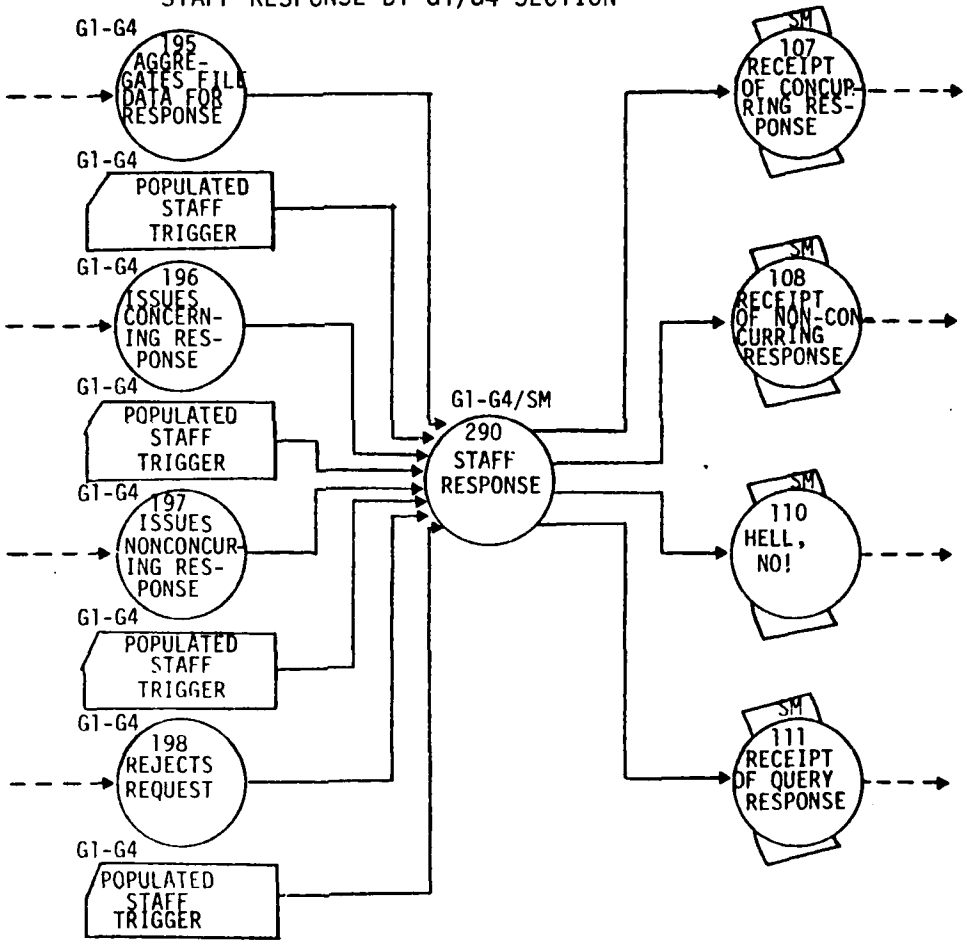


EVENT THREAD CHART #89
DEFINING EVENTS 105, 106, 192, 193, 289
STAFF REQUEST BY G1-G4 SECTION



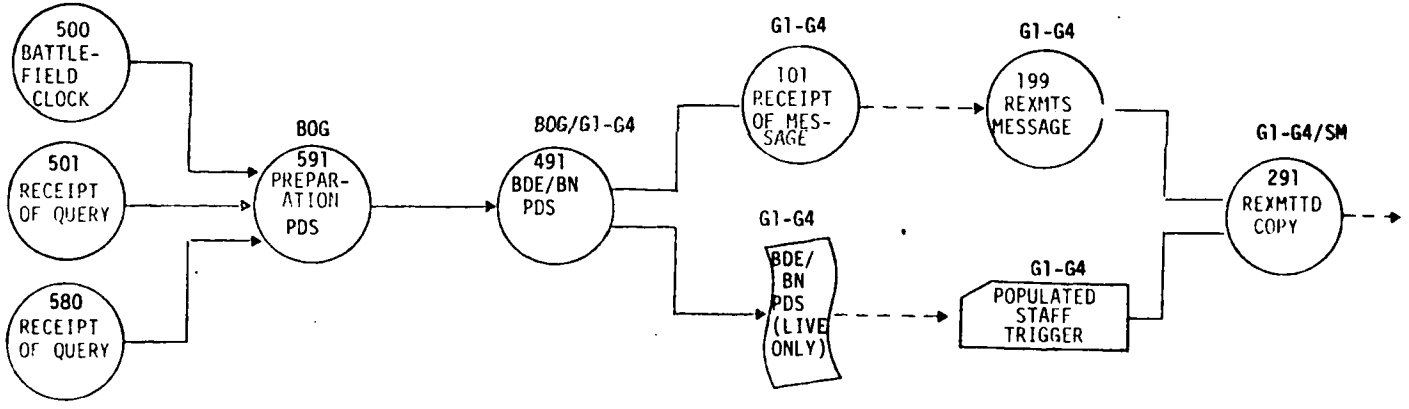
NOTE: SM may be FSE, G2, or G3.

EVENT THREAD CHART #90
DEFINING EVENTS 107, 108, 110, 111, 195, 196, 197, 198, 290
STAFF RESPONSE BY G1/G4 SECTION



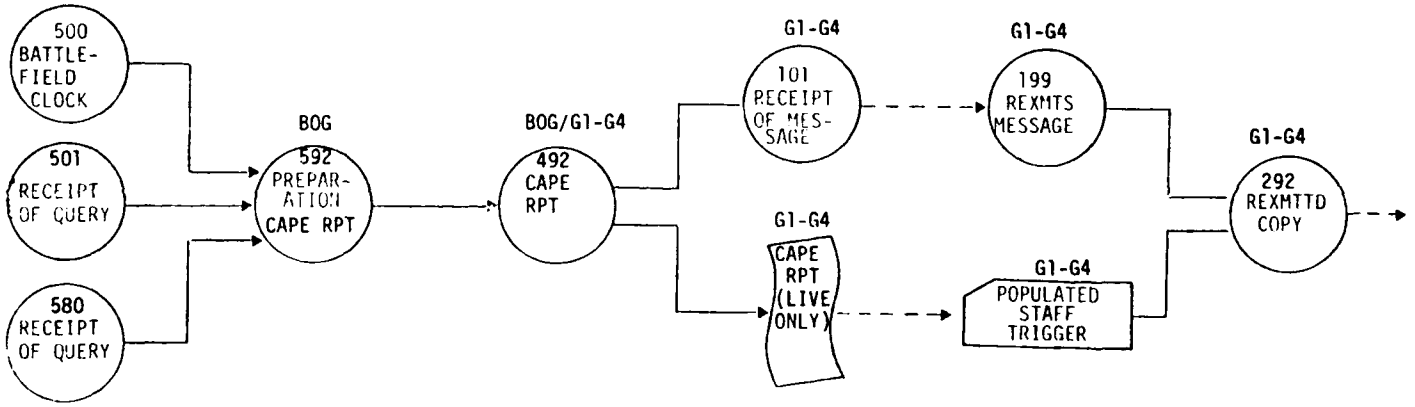
NOTE: SM may be FSE, G2, G3.

EVENT THREAD CHART #91
DEFINING EVENTS 101, 199, 291, 491, 591
BRIGADE/BATTALION PERSONNEL DAILY SUMMARY

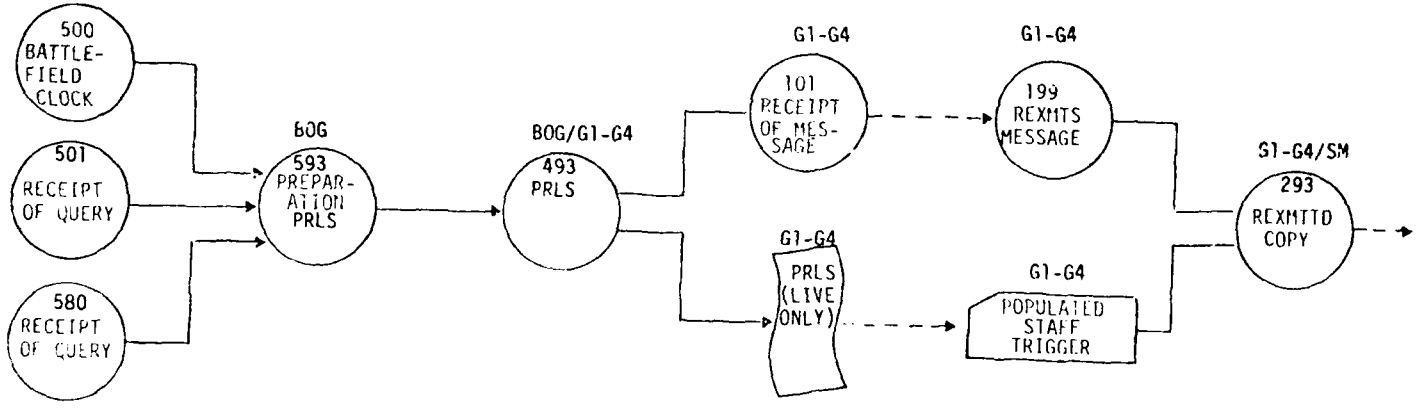


NOTE: SM depends on nature of daily summary.

EVENT THREAD CHART #92
DEFINING EVENTS 101, 199, 292, 492, 592
CASUALTIES, AMMUNITION, POL, EQPMT REPORT

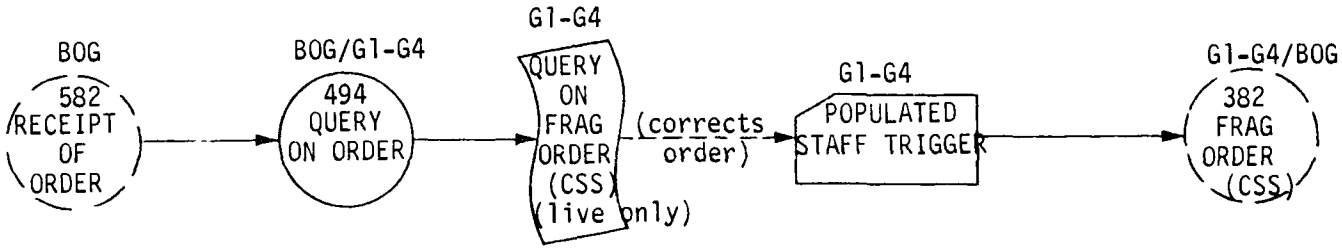


EVENT THREAD CHART #93
DEFINING EVENTS 101, 199, 293, 493, 593
PREPLANNED REQUEST FOR LOGISTIC SUPPORT

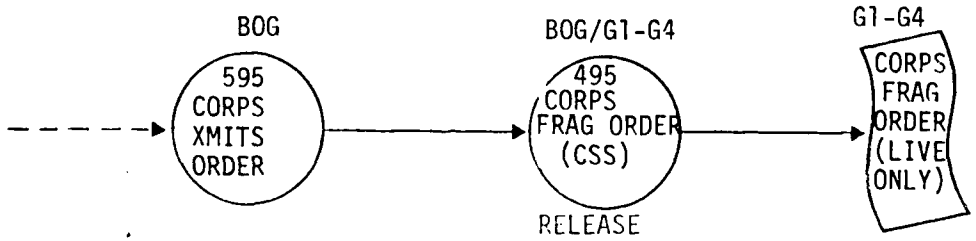


NOTE: SM depends on nature of request.

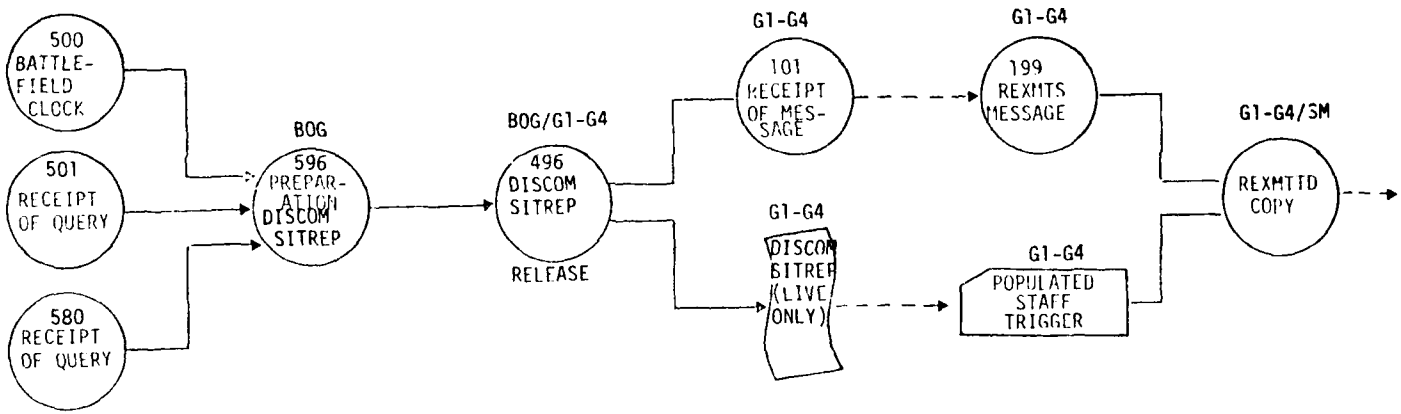
EVENT THREAD CHART #94
DEFINING EVENT 494
QUERY ON ISSUED FRAG ORDER (CSS)



EVENT THREAD CHART # 95D
DEFINING EVENTS 495, 595
CORPS FRAG ORDER (CSS)

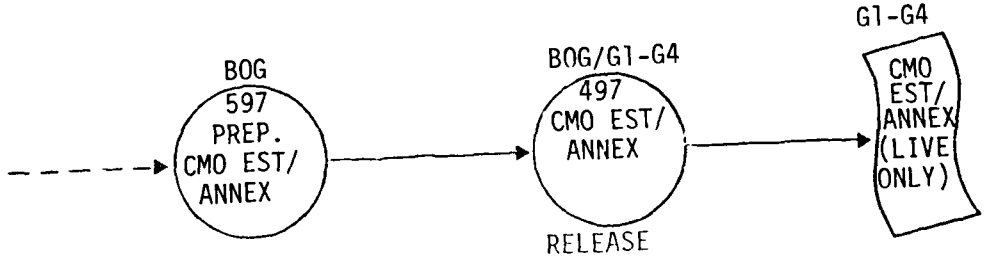


EVENT THREAD CHART #96D
DEFINING EVENTS 101, 199, 296, 396, 596
DISCOM SITUATION REPORT

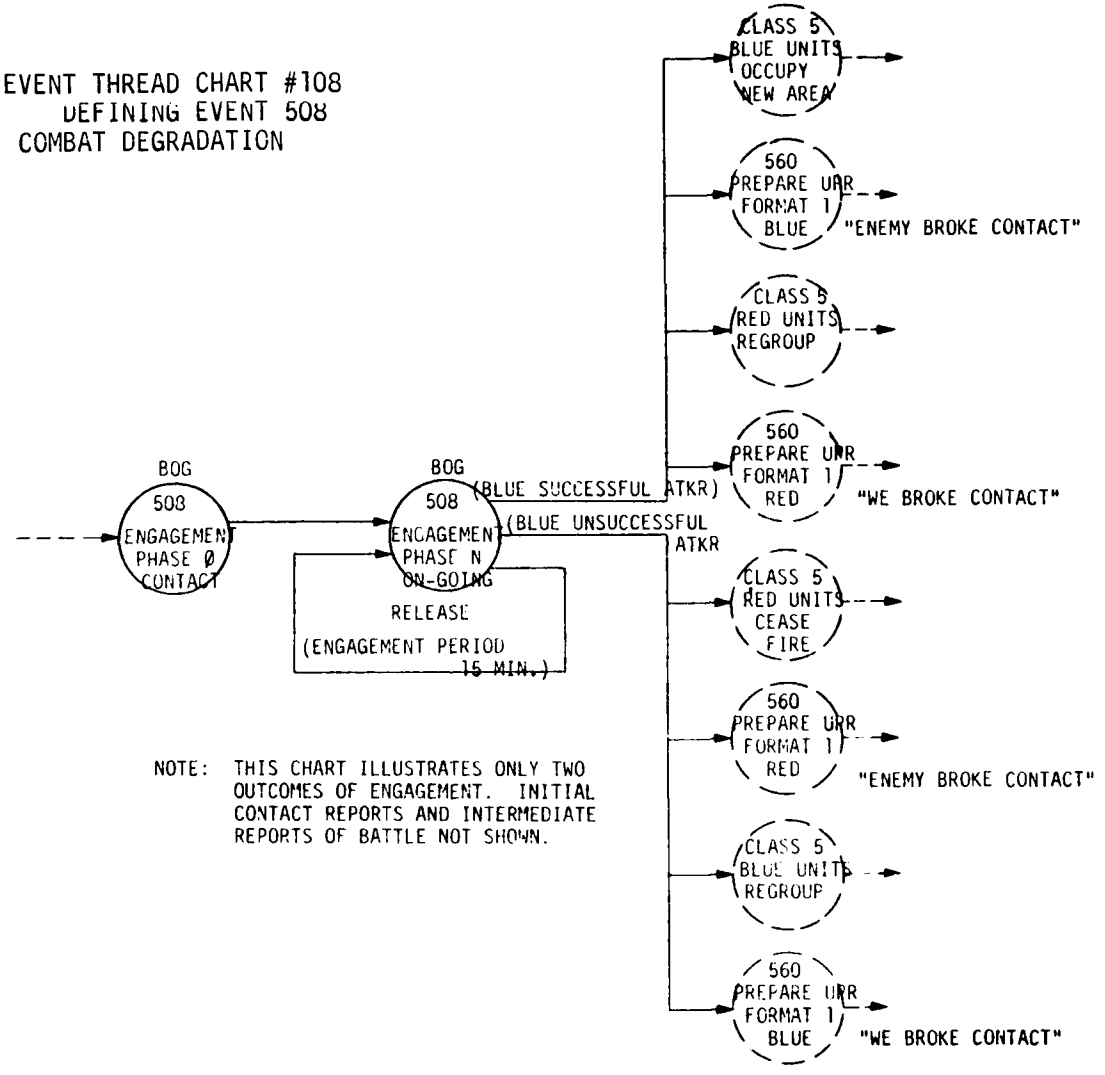


NOTE: SM depends on the nature of report.

EVENT THREAD CHART # 97D
DEFINING EVENTS 497, 597
CMO ESTIMATE/ANNEX

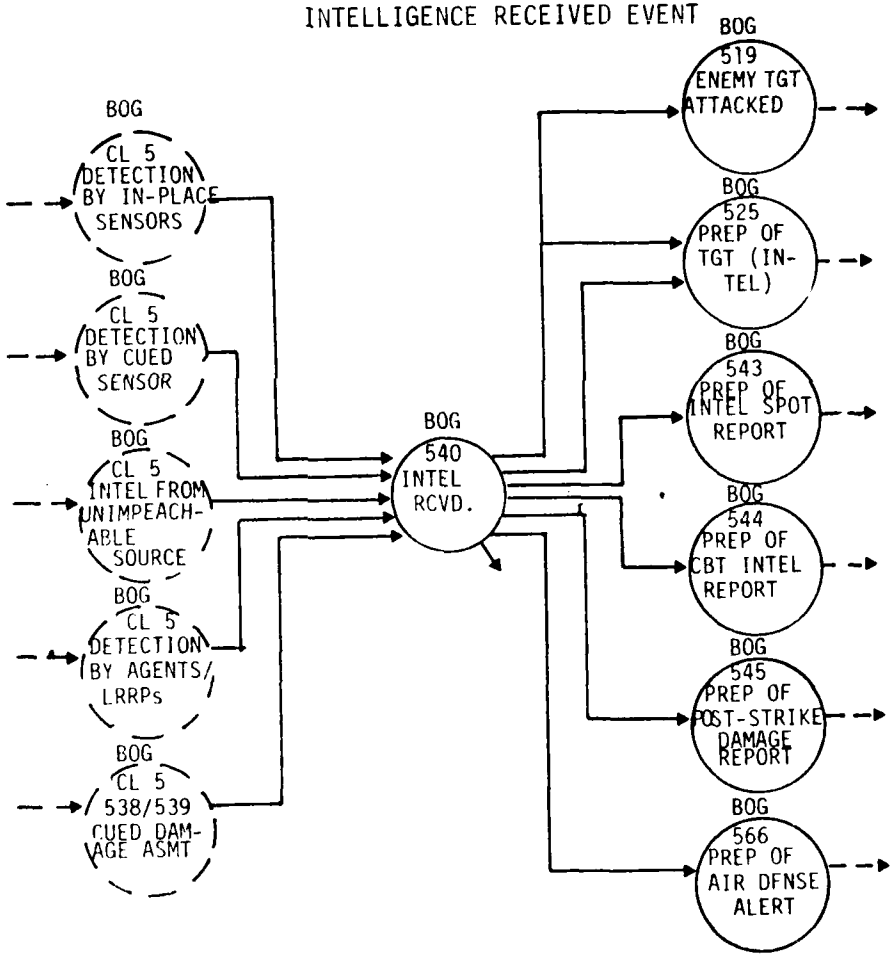


EVENT THREAD CHART #108
DEFINING EVENT 508
COMBAT DEGRADATION



NOTE: THIS CHART ILLUSTRATES ONLY TWO OUTCOMES OF ENGAGEMENT. INITIAL CONTACT REPORTS AND INTERMEDIATE REPORTS OF BATTLE NOT SHOWN.

EVENT THREAD CHART #140
DEFINING EVENTS 538, 539, 540
INTELLIGENCE RECEIVED EVENT



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